



The Health*Connect* Benefits Realisation Framework

V1.0 – 12 October 2004

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1 Executive Summary

HealthConnect, Australia's electronic health information network, is a major long-term program of national change and thus needs to be approached strategically. It has the potential to benefit every Australian, particularly health consumers and providers, by improving access to health information and empowering consumers to take a greater role in their health care. It also has the potential to address community concerns regarding safety and quality, to improve health sector efficiency and to reduce the rate of increase in health expenditure.

HealthConnect is endorsed by the Australian Health Ministers and supports the national health reform agenda.

The Australian health system is constantly evolving due to a range of transformational and enabling initiatives. HealthConnect is one such initiative and stands along-side other significant initiatives by providing an essential ingredient to support systemic change, viz. information sharing.

Each of the transformational and enabling initiatives creates change in different ways and the overall effect enables systemic change to occur. Thus, HealthConnect has a vital role to play in both progressing the Australian health system reform agenda and in delivering benefits.

HealthConnect's Benefits Realisation Framework

The principal purpose of the Benefits Realisation Framework is to inform the development of the HealthConnect Implementation Approach. The Framework is also intended to provide guidance to key stakeholders who are considering implementation strategies in their jurisdictions, particularly those States and Territories planning statewide implementations.

The Benefits Realisation Framework:

- Includes a process-impact-outcome analysis, which identifies health care processes that will be positively impacted by HealthConnect and will consequently lead to desired health outcomes;
- Identifies population and disease groupings with high health care needs. High early take up by these consumers and their health care providers is likely to have a significant positive impact upon cost offsets and other enduring benefits;
- Highlights the health care settings where HealthConnect should have a high impact;
- Suggests governance arrangements which will be necessary to drive the continual realisation of benefits over the lifetime of HealthConnect; and
- Outlines evaluation arrangements that include the development and implementation of an ongoing evaluation strategy, including an economic evaluation protocol.

Benefits Realisation in Health Care

A benefit does not simply result from the implementation of a new or modified capability (e.g. a new information system). A deliberate program of change is required to deliver benefits. A benefits realisation approach is essentially a business-oriented framework, supported by a set of processes, techniques and instruments that enables the selection and

management of a portfolio of programs. This approach ensures that benefits are clearly identified, and means that they can be measured, optimised and realised.

Improvements in long-term health outcomes are likely to result from the combined influence of a range of health initiatives, both at the systemic level and the practice level. The effects of these initiatives serve to complicate the measurement of benefits attributable to HealthConnect and vary the timing of observable changes.

Improvements in the processes used by clinicians in diagnosis and ongoing patient management should, through improved access to key information, lead to increases in system capacity, and safety and quality more generally. This ultimately contributes to the achievement of improved health outcomes. Thus it is important to recognise that HealthConnect has a key role in process efficiency improvement and in contributing to improved health outcomes.

The Impact of Information on Health Care Processes

Health care, like many industries, depends on information. The availability of key information can make a huge difference in clinical settings – sometimes the difference between life and death. As consumers typically use the services of a variety of health care providers, the lack of an ability to access essential information can have a dramatic effect on providers' efficiency, on consumers' confidence in, and satisfaction with, the system, and also on the outcomes of an intervention.

There are considerable consumer and provider efficiencies to be derived from improvements in health care processes enabled through access to key information from the implementation of HealthConnect. This applies particularly in the "gaps" between health care providers. One of the key contributions that HealthConnect can make is to facilitate the sharing of critical information across health care settings, especially between those settings where there is scope to improve current information flows.

HealthConnect will need to provide accurate health record information, when required, in support of clinical and related care. Providing access to information in support of health care is paramount to early acceptance of HealthConnect by both providers and consumers. This will be a significant factor in ensuring that necessary take up levels are reached. Improving the flow of information to clinicians should also improve communication between providers and consumers, and enable consumers to participate in the management of their health care.

Informing Implementation Planning for HealthConnect

HealthConnect will have a strong positive impact on the efficiency and quality of health care processes, which will ultimately contribute to improved population health outcomes. While this is likely to be achieved in the longer term, it is important to identify where early benefits can be achieved, and to focus initial implementations on these areas (i.e. the implementation will be benefits-driven). The identification of these areas is one of the key aspects of the Benefits Realisation Framework.

To aid this process, an analysis of population groups with high health care needs is presented to identify areas for initial prioritisation for implementation. HealthConnect's potential impact on these areas is also considered. The rationale for this approach is that the benefits from these groups are likely to be greater over time, and realised earlier, if there is a concerted focus to involve them in the early stages of HealthConnect's implementation.

If these groups are involved in the early implementations of HealthConnect then high levels of participation and use in these groups should be achieved, enabling the delivery of process efficiencies, and the realisation of benefits in the longer term.

Recommended Initial Priority Groups for Implementation

The disease and population age groups recommended for initial implementation focus are:

- The very young (0 – 4 years), particularly new-borns and their parents;
- People diagnosed with chronic and complex conditions and co-morbidities, such as cardiovascular disease and diabetes, which are in higher proportions in the following population groups:
 - Older Australians (55+ years); and
 - Aboriginal and Torres Strait Islander peoples.

All Australians could benefit from HealthConnect, and all eligible consumers and providers will be able to participate. However, as it is not feasible to launch HealthConnect with the broadest range of services and to initially engage all provider types, it is helpful for program planning to have an optimum place to start. The list above will assist in this process.

Improving Research and Practice

The implementation of HealthConnect will create the capability to produce integrated, de-identified health and administrative data sets, bringing together information currently collected in many separate administrative and research units. This information can inform strategies for improving the efficiency and effectiveness of the health system and individual patient outcomes.

Achieving a high level of take up of HealthConnect by both providers and consumers will lead to more comprehensive data sets being available. Secondary use of HealthConnect data for research purposes can contribute to the evaluation of various clinical interventions for specific population groups and assist in providing evidence for the cost effectiveness of disease prevention strategies.

Governance and Evaluation

To deliver on its potential, HealthConnect requires national governance arrangements with guiding principles, defined roles, responsibilities and accountabilities so that the program maintains a benefits-driven approach. In addition to its guiding and leadership role, governance should be viewed as a function to support the realisation of benefits.

An essential aspect of effective management and governance of HealthConnect will be the ability to measure the impact of the program and to use the results to adjust it as it proceeds. Continuously monitoring the realisation of benefits and making changes to ensure their delivery is a key feature of benefits-driven change programs. The Benefits Realisation Framework outlines requirements and a series of recommended steps to ensure strong governance and evaluation.

It is important to recognise here that many of the high-level benefits from HealthConnect will only be apparent over time. Subsequently, in the initial stages of implementation, there is a need to focus on some of the more immediate benefits, rather than expecting to see major improvements in health outcomes in the short term.

2 Introduction

2.1 Background to HealthConnect

HealthConnect is a joint Australian, State and Territory Governments initiative that has been endorsed by Australian Health Ministers.

HealthConnect is Australia's health information network which aims to improve the delivery of health care and provide a better quality of care, increase patient safety and improve health outcomes through a seamless, secure, integrated system of electronic health records. It is anticipated that HealthConnect will have a broad and significant impact on the Australian health sector.

HealthConnect will be accessible to all Australians. Enrolment in HealthConnect will be voluntary for both consumers and providers. A consumer must participate in HealthConnect for an electronic health record to be established and maintained.

With the consent of individual consumers who choose to participate, HealthConnect will enable standard health information to be collected, stored and exchanged in event summary format. With the consent of the consumer, this information will be available to providers at the point of care and to consumers who wish to access their own record. Having more complete and up-to-date information available means that consumers and their providers will be in a position to make more appropriate health care decisions.

HealthConnect is intended to be a passive storage system that does not perform complex clinical analyses of data. HealthConnect is not intended to extract data proactively from operational systems; rather it will receive event summaries sent from operational systems at the direction of the user.

In March 2004, the Australian Government announced funding for the commencement of national implementation of HealthConnect, beginning with statewide implementations in South Australia and Tasmania from July 2004 as part of the MedicarePlus package. Implementation will proceed in other states and territories on a case-by-case basis.

In June 2004, the Australian Government also announced its policy position on the use of the Medicare smartcard:

Australians will have access to a new Medicare smartcard as part of the government's electronic health agenda to improve the quality and accessibility of patient information across the health system. The new Medicare smartcard and HealthConnect will enable patients and healthcare providers to securely share health information across a range of health services, improving the safety and quality of Australia's health system.¹

The implementation of an integrated HealthConnect network will incorporate the functionality of MediConnect to provide the medicines component. In this way, it supports

¹ Hon Tony Abbott, MHR, Minister for Health and Ageing, *New Medicare smartcards*, Media Release, 24 June 2004, available at <http://www.health.gov.au/mediarel/yr2004/ta/abb085.htm>

the National Medicines Policy (including the strategy for the Quality Use of Medicines), which is to optimise the use of medicines to improve health outcomes for all Australians.

HealthConnect will operate seamlessly and consistently across Australia with the same requirements for privacy, identification, registration, consent and security and access control applying everywhere. When a registered consumer has contact with the health system (for example, with a GP, specialist, hospital, community health centre, pharmacy, allied health providers, diagnostic services etc), a standard event summary may, with the consumer's consent, be created and sent electronically to a HealthConnect repository. A person's health record will then be available with the consumer's consent to inform health care decisions.

Working in this way, HealthConnect is expected to increase efficiency (e.g. by decreasing the incidence of unnecessary services, and saving time in chasing information), lead to more appropriate decisions, reduce adverse events and improve health outcomes. HealthConnect will also provide a rich source of information that can assist research and health policy planning and development.

It is important to recognise that HealthConnect is a long-term project, and that many of the major systemic health outcome benefits will only be realised in the longer term. However, many of the more immediate benefits of HealthConnect, such as improving information flows across care settings, are expected to be delivered in shorter timeframes. Nevertheless, there is a need to acknowledge that larger systemic benefits will only be realised in the longer term.

2.2 Electronic Health Records

The National Electronic Records Taskforce defined an electronic health record (EHR) as:

*An electronic, longitudinal collection of personal health information, usually based on the individual, entered or accepted by health care providers, which can be distributed over a number of sites or aggregated at a particular source. The information is organised primarily to support continuing, efficient and quality health care. The record is under the control of the consumer and is stored and transmitted securely.*²

The EHR system provides for a number of separate prototypes. The Clinical Information Project has identified the components of the EHR that will require system prototypes, such as Health Event Summaries, EHR lists and EHR views. Details are provided in Appendix A

2.3 Background to this Benefits Realisation Framework

Fujitsu was engaged to assist in the implementation planning for HealthConnect. This work builds on the Research and Development (Phase 1) and Pre-implementation (Phase 2) phases of HealthConnect and on the *HealthConnect Indicative Benefits Report*,³ prepared by DMR Consulting in February 2004.

² National Electronic Records Taskforce, *A Health Information Network for Australia*, Canberra, July 2000, cited in Department of Health and Ageing, *HealthConnect Systems Architecture*, Version 0.9, Canberra, 2003, p10. Available at http://www.health.gov.au/healthconnect/pdf_docs/sa1-72.pdf

³ Department of Health and Ageing, *HealthConnect Indicative Benefits Report*, Canberra, 2004. Available at http://www.health.gov.au/healthconnect/pdf_docs/hcibrv1.pdf. (Note: DMR Consulting and Fujitsu merged in Australia on 1 April 2004).

This consulting engagement spans three streams of work:

- HealthConnect Implementation Approach;
- HealthConnect Benefits Realisation Framework (this document); and
- HealthConnect Implementation Plan.

The following diagram illustrates the relationships between these streams of work and their respective outputs:

How it links together

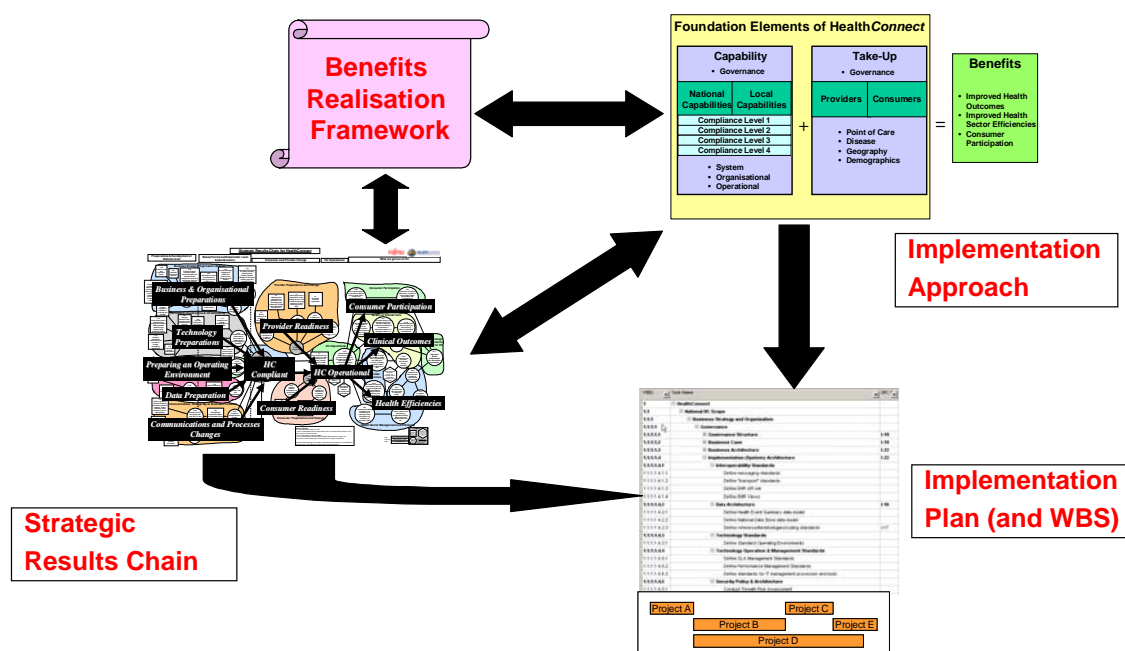


Figure 1: HealthConnect Implementation Overview⁴

⁴ The HealthConnect Strategic Results Chain, as illustrated in Figure 1, was developed using Fujitsu's Benefits Realisation methods. The Results Chain aids in the conceptualisation of the Implementation Approach and offers a means of linking benefits and implementation planning. It provides an overall program view of HealthConnect. The Strategic Results Chain is discussed in more detail in Chapter 5.

The Benefits Realisation Framework has also been guided by HealthConnect's business requirements, the HealthConnect Program Office, and inputs from the current HealthConnect trials. The Benefits Realisation Advisory Group,⁵ a time-limited multi-disciplinary expert advisory group, has provided input into the development of this Framework.

2.4 Purpose of the Benefits Realisation Framework

The principal purpose of the Benefits Realisation Framework is to inform the development of the HealthConnect Implementation Approach. The Framework also provides guidance to key stakeholders who are considering implementation strategies in their jurisdictions, particularly those States and Territories planning early statewide implementations.

The Benefits Realisation Framework:

- Includes a process-impact-outcome analysis which identifies health care processes that will be positively impacted by HealthConnect and will consequently lead to desired health outcomes;
- Identifies population and disease groups with high health care needs. High early take up by these consumers and their providers is likely to have a significant positive impact upon cost offsets and other benefits;
- Highlights the health care settings where HealthConnect should have a high impact;
- Suggests governance arrangements which will be necessary to drive the continual realisation of benefits over the lifetime of HealthConnect; and
- Outlines evaluation arrangements proposed that include the development and implementation of an ongoing evaluation strategy, including an economic evaluation protocol.

⁵ The Benefits Realisation Advisory Group consisted of Assoc. Prof. Rob Carter (University of Melbourne), Ms Joanna Kelly (NSW Health), Ms Debbie Rigby (Pharmacy Advisor), Ms Sue Pluck (Consumers' Representative), Dr Geoff Chapman (Southern Tasmanian Division of General Practice), Prof. Branko Celler (University of NSW), Dr John Youngman (Advisor), Dr Christopher Kelman (DoHA), and Dr Scott Germann (South Australian Department of Health).

3 HealthConnect's Context

This chapter discusses the context around the development of HealthConnect and the relevance of benefits realisation to that context. It includes:

- HealthConnect's role amongst the broader national health system reform agenda;
- The health priorities of the States and Territories;
- An analysis of the business requirements of HealthConnect; and
- A discussion of features of the Australian health system relevant to achieving benefits through HealthConnect.

3.1 HealthConnect and Other Health Initiatives

Australia's health care system is continuously changing and evolving. The drivers of change come from many sources – both deliberate (e.g. government policy) and external (e.g. demographic, technological, etc.). It is important to appreciate this environment when considering a major program such as HealthConnect.

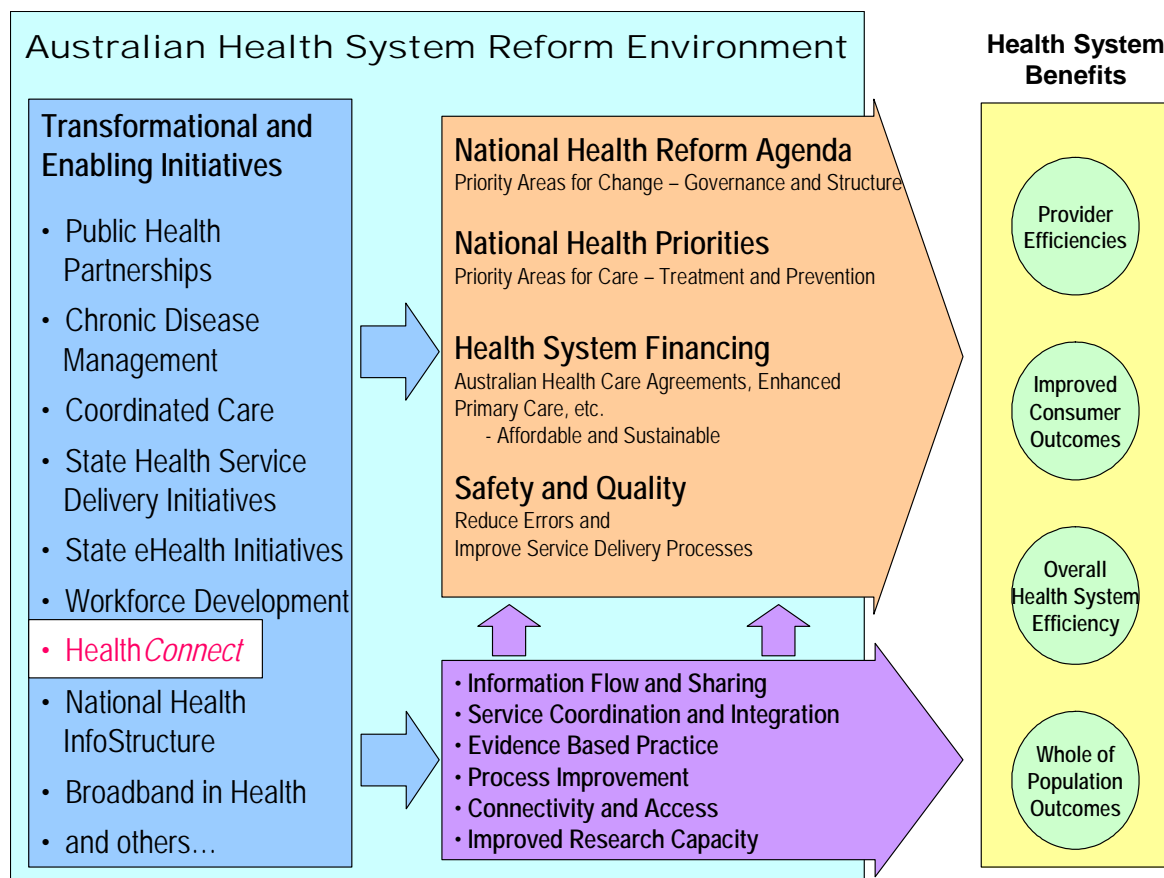


Figure 2: Contribution of National Health Information Reform to the Health System

Figure 2 illustrates the range of changes that are shaping Australia's health care system, with the desired health system benefits described in the circles on the right. The large box on the left represents the collection of reform and change processes that continuously adjust the system to facilitate benefits.

There are a number of major overarching programs, e.g. the National Health Reform Agenda, the National Health Priority Areas, and others represented in the large block arrow, that have a recognisable reforming influence. These are supported by a range of transformational and enabling initiatives (some of which are listed in the box on the left). HealthConnect is included here as it stands alongside these other significant initiatives, providing an essential ingredient to support systemic change.

Each of these transformational and enabling initiatives creates change in different ways and the overall effect enables systemic change to occur. The types of changes that are listed in the lower block arrow illustrate those that are enabled by the e-health-related initiatives, of which HealthConnect is a major contributor.

Thus, HealthConnect has a vital role to play in both progressing the Australian health system reform agenda and in actually delivering benefits.

3.2 National Health Reform Agenda

In continuing to progress reform, the Australian Health Ministers agreed to key areas of health care reform at their meeting on 28 November 2003. The resultant National Health Reform Agenda identifies a number of priority action areas to June 2004, which are grouped into areas of focus.⁶ Subsequently, on 29 July 2004 Australian Health Ministers also reaffirmed their strong commitment to improving safety and quality of health care and, in recognising its key role, to progressing a national approach to Information Management and Information Communications Technology in health.⁷

HealthConnect has the potential to make a significant contribution to several areas of the National Health Reform Agenda (outlined below). The HealthConnect contribution to the National Health Reform Agenda is discussed further in Appendix C .

- Hospital Interface Issues: Emergency Departments and General Practice;
- Improved Transition between Acute and Aged Care Services;
- Improved Access to Elective Surgery;
- Continuum of Care: Management of Chronic Disease;
- Cancer Care;
- Pharmaceuticals;
- Information Management and Information Technology;
- Safety and Quality; and

⁶ Australian Health Ministers' Conference Joint Communiqués, 28 November 2003 and 23 April 2004.

⁷ Australian Health Ministers' Conference Joint Communiqué, 29 July 2004.

- Workforce.

3.3 State and Territory Governments' Health Priorities

In addition to the national perspective discussed above, each State and Territory Government has articulated its own health priorities. In general, these priorities do not vary significantly from the national agenda, but nonetheless need to be recognised as a key part of the landscape in which HealthConnect operates. The priorities that are common to most States and Territories include:

- Improving consumer centred information;
- Improving health care through information management, including the development of electronic health records;
- Improving safety and quality;
- Better management of complex and chronic diseases; and
- Partnerships with all health providers in a continuum of care.

Appendix D lists State and Territory Government health reform aims and priorities.

Naturally, the priorities of States and Territories will influence implementation strategies for HealthConnect. The analysis of the State and Territory health priorities found that HealthConnect has the potential to make a significant contribution to the achievement of these priorities and therefore benefit consumers, providers and governments. This Benefits Realisation Framework, when used in conjunction with the Implementation Approach, provides an overarching framework for realising the benefits from the implementation of HealthConnect across the Australian health sector.

3.4 Analysis of HealthConnect-related Business Requirements

As part of the development of the HealthConnect business architecture, a number of business requirements are being developed. The HealthConnect business requirements define the future enterprise, business, system, data and work architectures that are necessary to enable HealthConnect to be more responsive to change. The HealthConnect architectures are also blueprints for the potential integration of existing and new systems, information and data sources across the health sector. As such, the national business requirements are key enablers of both HealthConnect implementation and ongoing operation.⁸

They encompass:

- Privacy and Consent;
- Registration and Identification;

⁸ The national business requirements referred to in this Benefits Realisation Framework reflect their status at 11 August 2004. These business requirements may evolve further once final positions have been reached on HealthConnect governance, the business model, operating models, legal issues, provider business process changes and the resultant business and system architectures.

- Security and Access Control;
- Health Information Processing and Storage; and
- User Interfaces, Messaging and Transport.

These draft business requirements have been assessed in terms of their potential impact upon the HealthConnect Benefits Realisation Framework, the Implementation Approach and the Implementation Plan. The result of this analysis is included in Appendix E .

The analysis of the business requirements found that strong consumer and provider confidence would result from the implementation of a robust privacy and consent regime and supporting registration processes, which is anticipated to lead to high take up rates. Any changed processes within a clinical setting that leads to a reduction in patient throughput will conversely result in low clinician acceptance and lower provider take up of HealthConnect. As information to be input to HealthConnect needs to be captured efficiently during patient-clinician interactions, significant upgrades to existing clinical information systems will be inevitable for benefits to be realised.

Highly efficient registration processes for providers and consumers will also be essential to ensure initial take up, acceptance, participation and ongoing use of HealthConnect to support clinical decision-making. Unique identification of consumers, providers and facilities in HealthConnect is therefore a prerequisite to successful implementation.

The national coordination layer, which will govern and manage security and access control and specify efficient user interfaces, messaging, transport and storage mechanisms (to ensure no reduction in provider efficiencies) will also be a critical determinant in take up, ongoing use and benefits realisation. If any reduction in provider efficiency occurs, use of the system will be low, limiting both the efficiencies that HealthConnect can deliver and the overall benefits of the system.

3.5 Key HealthConnect Stakeholders

The implementation of HealthConnect is designed to deliver a number of economic, financial, and social benefits to a wide range of key stakeholders, indicative of the scale and complexity of the HealthConnect system. Many of these stakeholders will drive the take up and realisation of benefits from the implementation of HealthConnect. Key stakeholders are listed below.

Consumers

- Consumers of health services and their associated support networks (e.g. carers, family members, guardians).

Health Service Providers

- General practitioners (GPs);
- Specialists;
- Nurses;
- Private and public hospitals (inpatient, outpatient and emergency services providers);

- Community health centres and services;
- Nursing home services;
- Pathology services;
- Medical imaging services;
- Pharmacy services;
- Aboriginal health services;
- Rural health services;
- Ambulance services;
- Allied health services; and
- Other primary care providers.

Government, Research and Administration

- Australian Government;
- State and Territory Governments;
- Australian Government Department of Health and Ageing;
- State and Territory Departments of Health;
- HealthConnect governance bodies;
- Health Insurance Commission (HIC);
- Australian Institute of Health and Welfare (AIHW);
- National groups such as the Australian Council for Safety and Quality in Health Care, National Health and Medical Research Council, Australian Health Information Council, National Health Information Group, Australian Pharmaceutical Advisory Council, Pharmaceutical Health and Rational Use of Medicines Committee etc.
- Tertiary institutions and research organisations; and the
- Health and medical research community.

Health sector representatives and provider organisations

- Divisions of General Practice and specialty colleges and associations;
- Health insurance sector;
- Non-government organisations responsible for representing the interests of various constituencies including, for example, the Australian Medical Association, Australian

Nursing Federation, Pharmacy Guild of Australia, Australian Consumer Federation, Consumers' Health Forum, Diabetes Australia, Heart Foundation, Health Informatics Society of Australia, Medical Software Industry of Australia and similar bodies;

- ICT industry vendors and service providers, including telecommunications carriers and equipment providers, vendors of clinical terminologies, practice management, clinical information and patient administration management systems; and
- Potential investors in the build and operational phases of HealthConnect.

3.6 Benefits Realisation in Health Care

The quantification and measurement of the outcomes from implementation of HealthConnect is not without some difficulty. This is particularly so when the desired improvements in long term health outcomes are likely to result from the combined influence of a range of initiatives, as discussed earlier. The effects of these initiatives serve to complicate the measurement and attribution of benefits to HealthConnect and to vary the timing of observable changes.

Improvements in the processes used by clinicians in diagnosis and ongoing patient management should, through improved access to key information, lead to increases in service delivery and system capacity, and safety and quality more generally. This ultimately contributes to the achievement of improved health outcomes.

HealthConnect will be most valuable in facilitating information flows between health care settings (for example, between a GP and a hospital), rather than within settings (such as within a hospital), where existing internal systems will play a large role in information transfer. Thus it is important to recognise that HealthConnect has a key role in process efficiency improvement and hence in improving health outcomes.

This Benefits Realisation Framework analyses both areas of benefits to inform the selection of initial priority groups for implementation. As previously highlighted, HealthConnect will require high levels of consumer and provider take up for anticipated benefits to be realised. An approach targeted at areas of high health care needs, where HealthConnect can improve access to health information is therefore likely to result in the earlier realisation of benefits across the Australian health sector.

3.7 The Australian Health Care System

Health expenditure in Australia represented 9.3% of Gross Domestic Product (GDP) in 2001-02, compared with 8.7% in 1998-99 and 8.1% in the early 1990s, which suggests that health expenditure is increasing both in absolute terms and as a percentage of GDP. In 2001-02, \$66.6b was spent on health services in Australia. About 69% of this total was funded by governments: 46% by the Australian Government and 23% by State, Territory and Local Governments.⁹

While the governments of Australia play a significant role in both purchasing and providing services in the Australian health care system, it is important to realise that the system's structure will mean that HealthConnect will also have an influence on the private sector. As

⁹ Australian Institute of Health and Welfare (AIHW), *Australia's Health 2004*, AIHW Cat. No. AUS 44, Canberra, 2004, p230.

The mix of public and private funding and public and private service provision in Australia's health system, with policy and regulatory controls from multiple levels of government, presents a challenging environment for systemic change. This is further complicated as stakeholders each seek a return on their investment while simultaneously wanting to experience the benefits created by a national approach.



Department of Health & Ageing

4 Realising the Benefits of HealthConnect

This chapter outlines the thinking behind the Benefits Realisation Framework and the research that resulted in the selection of priority areas for initial implementation planning of HealthConnect. It includes:

- A discussion of benefits and approaches to their realisation;
- An outline of the approach used in developing the Benefits Realisation Framework;
- A description of the process efficiencies that HealthConnect could provide;
- Identification of recommended initial focus areas to guide implementation planning, with supporting data; and
- A discussion of other areas where the implementation of HealthConnect could provide system-wide benefits.

As noted earlier, the principal purpose of the Benefits Realisation Framework is to inform the HealthConnect Implementation Approach. It also provides guidance to key stakeholders who are considering implementation strategies in their jurisdictions, particularly those State and Territories planning early Whole of State implementations.

4.1 Benefits and Approach to their Realisation

In simple terms:¹¹

- A benefit is an outcome whose nature and value are considered advantageous by an organisation.¹² It is a desired outcome from a managed change to the business that has been selected for investment as being more attractive than benefits from alternative change initiatives or from maintaining the status quo; and
- An outcome can be intermediate (contribute to another outcome) or be ultimate (the final desired state), which contributes positively to achieving a strategic business goal.

A benefit does not simply result from the implementation of a new or modified capability (e.g. a new information system). A deliberate program of change is required to deliver benefits. A benefits realisation approach is essentially a business-oriented framework, supported by a set of processes, techniques and instruments that enables organisations to select and manage a portfolio of programs. This approach ensures that benefits are clearly identified, and means that they can be measured, optimised and harvested.

It is expected that the national implementation of HealthConnect will benefit consumers, providers and the whole of the Australian health sector more generally. The benefits analysis that follows has built on the research and development activities of earlier phases of

¹¹ Thorp J. *The Information Paradox - Realising the Business Benefits of Information Technology*, 2nd edn, McGraw Hill, 2003.

¹² A benefit can be expressed in various ways, such as by placing a value on life or on pain and suffering.

HealthConnect, including the *Indicative Benefits Report*¹³ and recent experiences of the trials. The Australian Government Budget 2004-05 Health Fact Sheet No. 5 also identifies some potential benefits of HealthConnect.¹⁴

4.2 Potential Benefits from HealthConnect

The *Indicative Benefits Report* analysed the potential benefits from the national implementation of HealthConnect. The report focused on the impact of HealthConnect on adverse events (especially adverse drug events), diabetes as an example of a chronic condition, medication management and demand on Accident and Emergency departments.¹⁵

The report analysed potential financial benefits attributable to HealthConnect, if there is 100% take up by providers and consumers. The report took a conservative approach to estimating benefits. After removing potential areas of double counting, the cost offsets from the implementation of HealthConnect were estimated to be in the order of **\$396m per annum**.

The report also concluded that when HealthConnect is fully deployed, additional direct financial benefits could accrue, giving a total indicative benefits range of **\$554m to \$604m per annum**. These estimates did not consider the value of lives saved or improved quality of life or the broader economic and social benefits from the Australia wide implementation of HealthConnect.

However, the *Indicative Benefits Report* goes beyond simply estimating the potential benefits of HealthConnect in dollar terms. It also highlights some of the health care settings in which HealthConnect can deliver benefits, and outlines how HealthConnect can assist in health care delivery in these settings.

For example, in the discussion on how HealthConnect can reduce the incidence of adverse drugs events, the *Indicative Benefits Report* highlights a number of health care settings in which these events can occur, and indicates the proportion of adverse drug events that occurs in each setting, and the relevant impact of HealthConnect.

Table 1, on the following page, outlines some of the health care settings in which adverse drug events occur, the relative proportion of such events that occur in each setting, and how HealthConnect can contribute to reducing the number of such events.

While HealthConnect is expected to affect more health care settings than indicated in Table 1, the table does show that there are settings where there is scope to improve information flows and effect a reduction in adverse drug events. In turn, it is expected that improving these information flows could result in time savings for providers who would spend less time looking for patient information, and increased patient safety and quality of care due to a greater availability of information at the point of care.

¹³ Department of Health and Ageing, *HealthConnect Indicative Benefits Report*, Canberra, 2004. Available at http://www.health.gov.au/healthconnect/pdf_docs/hcibrv1.pdf

¹⁴ Australian Government Budget, 2004-05, *Health Fact Sheet 5*, 11 May 2004. See <http://www.health.gov.au/budget2004/hbudget/hfact5.htm> for further information

¹⁵ The *Indicative Benefits Report* (IBR), which draws upon a range of expenditure information, was prepared before the release of the Australian Institute of Health and Welfare publications *Health System Expenditure in Australia, 2000-01* and *Australia's Health 2004*. The data sources in the IBR are thus different from those used in this report.

Table 1: Settings, Proportion and Impact of HealthConnect on adverse drug events (ADEs)¹⁶

Setting for Cause of Adverse Drug Event	Indicative Proportion of ADEs per Setting	Impact of HealthConnect
Ongoing care by a single doctor	Low (although very large numbers of events – typically the severity and complexity of the encounter is low)	Low. Since many doctors will already have medication histories – however may not include complementary/over the counter medications – which may be provided by HealthConnect.
Between doctors (eg GP to GP, GP to specialist)	High (due to the very large number of encounters and the high movement between providers. The complexity of medication information may also be high)	High. Complex environment, often with incomplete data and relatively informal relationships and data sharing processes.
Ongoing domestic setting	Low (there is a very large number of events within the domestic setting with the vast majority being well defined by the treating doctor. Confusion and lack of empowerment by the consumer can however result in ADEs)	High. Potential for much greater engagement by the consumer in the responsibility of their own care
Community pharmacy setting	Low (very large number of events in a regulated/structured environment)	Very High. Reduction in drug selection errors as well as transcription and reading errors.
Nursing home and doctor to hospital	High (possibly a large proportion of all ADEs could fall into this category due to the high severity/urgency and moderate volume)	High. Especially since urgent nature of the treatment will often be impeded without ready access to medication histories. (Note that HealthConnect allows access in emergencies without specific consent).
Hospital to doctor	High (significant due to the significant changes in medications, the high risk of previous medications causing ADEs and delays in the availability of discharge summaries to treating doctor)	High. Key issues re timeliness and completeness of data, e.g. discharge summaries. Patient may not return to original doctor.
Hospital to nursing home	Low (due to the formalised process of entry to nursing home)	Low. Due to the formalised process of entry to Nursing Home
Doctor to nursing home	Low (due to the formalised process of entry to nursing home)	Low. Due to the formalised process of entry to Nursing Home
Ongoing care within a nursing home	Low (due to complexity and severity and need for co-ordination between doctors. However the number of encounters is low)	Medium. Complex environment, often with incomplete data and relatively informal relationships and data sharing processes. Added complexity of many visiting doctors and patients with many medications.

¹⁶ Adapted from the *HealthConnect Indicative Benefits Report*, p45 and p47.

Table 1 also highlights those settings in which HealthConnect is expected to have a substantial impact on adverse drug events. It follows that including these settings in the early implementation of HealthConnect will assist in maximising both the take up rates by providers and consumers, and the early benefits from the implementation. It will therefore be important for the implementation of HealthConnect to focus initially upon improving process efficiencies around interfaces between hospitals, community pharmacies, community health services, and GP and specialist practices.

HealthConnect will require some level of change to the business and work processes of providers. While the benefits may seem obvious, changing processes can be a significant challenge. In many cases, providers will not benefit from the information that they enter into the system – other providers caring for that consumer will benefit. However, the initial provider will benefit from other information regarding that consumer entered into the system. In other words, providers will benefit mainly from the use of HealthConnect by other providers. In this sense, change management and benefits realisation are inseparable. Their relationship is interdependent – benefits cannot be achieved without change, and change will not be sustainable without benefits.

4.3 Approach to the Benefits Realisation Framework

Given that HealthConnect may have a positive effect on health system process efficiency and, in time, on health outcomes, an approach was developed that addressed both areas.

Clinical processes are underpinned by information flows used to support clinical decision-making. The provision of timely and accurate information to enhance clinical decision-making is critical to increasing both the efficiency and the capacity of the Australian health system.

The approach used to analyse the benefits possible from the use of HealthConnect was to:

- Identify key health care processes;
- Analyse the impact that HealthConnect could have on them; and
- Describe the outcomes attributable to the impact.

This process-impact-outcome approach is a key feature of the Benefits Realisation Framework.

The example in Figure 4 illustrates how the ability for GPs to access accurate patient information, through their participation in HealthConnect, causes a number of impacts that in the longer term realise a number of efficiency benefits and improvements in overall health outcomes.

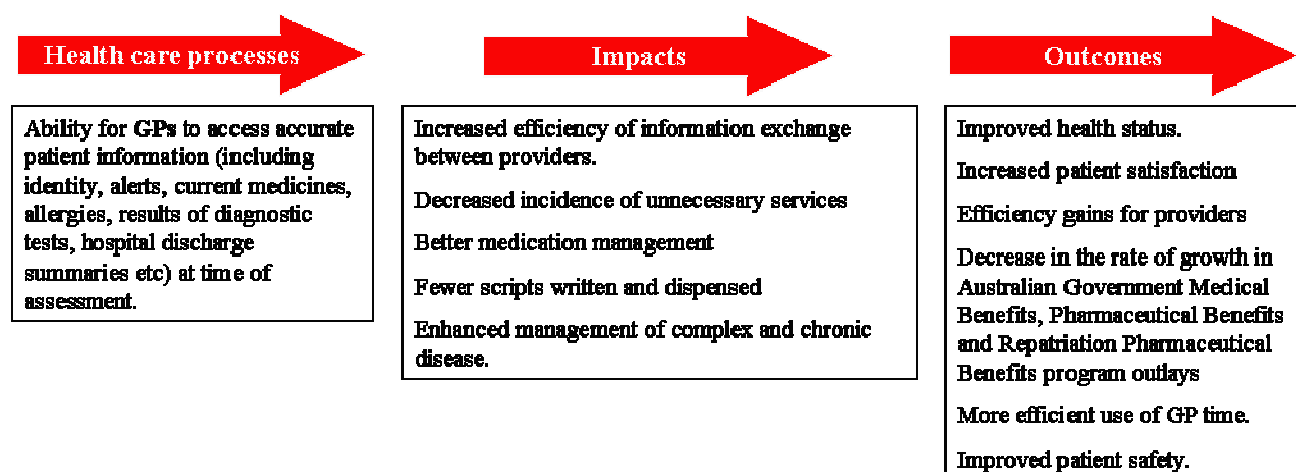


Figure 4: Example of the Detailed Benefits that can Result from HealthConnect

A surgical patient scenario is developed in detail in the following section to further illustrate this point. Key processes, impacts and outcomes from the implementation of HealthConnect are documented in detail in Appendix B .

In addition, analysis of health care needs and expenditure by disease and population age groups is used to identify suitable priority areas for initial implementation planning. The analysis and recommended selections are discussed in detail in Section 4.5. The selection of these groups for initial priority focus within the wider implementation of HealthConnect is also a key feature of the Benefits Realisation Framework.

4.4 Improving the Efficiency of Health Service Delivery

Health care, like many industries, depends on information. The availability of key information can make a huge difference in clinical settings – sometimes the difference between life and death. As consumers typically use the services of many health care providers, the lack of an ability to share essential information can have a dramatic effect on providers' efficiency, on consumers' confidence in, and satisfaction with, the system, and also on the health outcomes of the intervention.

Through making health information more accessible, and in a timely manner, HealthConnect can assist in addressing some of these inefficiencies. Table 1 outlines some of the health care settings in which HealthConnect is expected to make a difference, and outlines how HealthConnect can assist in reducing adverse drug events, which in turn improves patient safety and hence health outcomes.

4.4.1 Providers and Consumers Linked Through HealthConnect

Figure 5 shows consumers interfacing with providers in various health care settings through HealthConnect. Consumers are empowered both through their participation in HealthConnect and through enhanced communication with individual providers who also actively participate and share key information.

The interaction between a patient and the hospital accident and emergency department is shown separately to reflect clinicians' need for greater integration and coordination of services at the interface between community based and hospital based services.¹⁷

HealthConnect will facilitate more complete and well-informed *chains of care*, which are essential to the effective operation of HealthConnect. Figure 5 shows how providers and consumers will be linked through HealthConnect. These linkages will facilitate the transfer of information between providers across care settings, which should have a positive impact on the health of the consumer.

Critical to the success of HealthConnect is the effective engagement and ongoing support of consumers. Expectations from a consumer perspective are set out in the Consumers' Health Forum's 'Consumers and E-health Project Principles' position statement.¹⁸

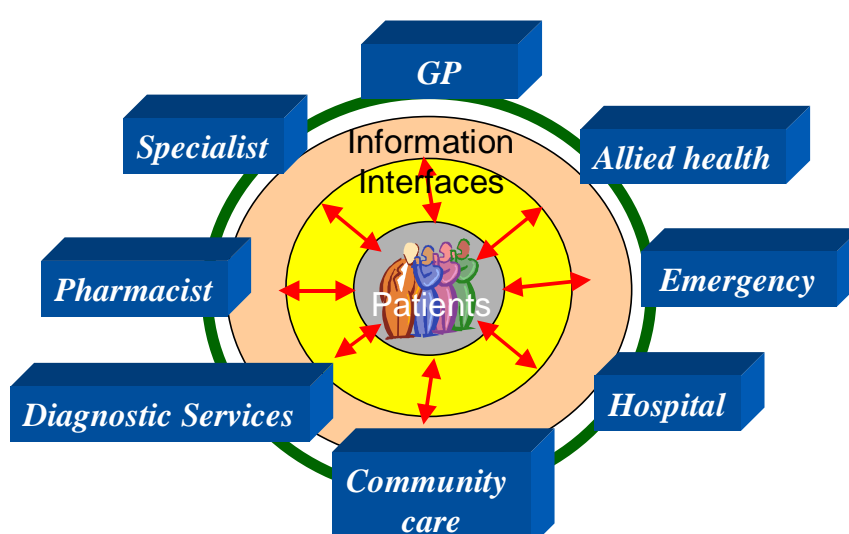


Figure 5: Patient-centred Health Care

4.4.2 A Surgical Patient Scenario

Table 2 presents a scenario for a HealthConnect-registered patient being referred by their GP to hospital for surgery. Each process identified has a series of consequential impacts that are either benefits or will lead to benefits.

The processes and impacts shown are only indicative and are not exhaustive, as health care circumstances will vary with each consumer and with the addition of other processes and consequential impacts. Again, the scenario demonstrates how HealthConnect will facilitate the sharing of information in the health sector, and how this will in turn benefit both providers and consumers.

¹⁷ The need to 'integrate and co-ordinate services at the interface between community based and hospital based services' is identified as a key national priority by Australian Health Ministers. See Australian Health Ministers' Conference Joint Communiqué, 29 July 2004.

¹⁸ Available at <http://www.chf.org.au/publications>

As a guide to the reader, in general there is not a one to one linkage between items in each of the table rows.

Table 2: Use of HealthConnect for a Consumer in a Surgical Scenario¹⁹

Indicative HealthConnect Processes	Indicative Impacts, Leading to Positive Health Outcomes
<p>Enrolment:</p> <p>Patient history and co-morbidities input to HealthConnect as part of the initial health profile.</p>	<p>Patient history available for future reference by clinicians and consumers – reducing the need to remember and repeat information.</p>
<p>GP consultation:</p> <p>GP views HealthConnect and reviews past history.</p> <p>GP undertakes consultation and updates information in local system, as per normal business practice.</p> <p>Diagnostic investigation ordered by GP. The result is submitted to HealthConnect.</p> <p>GP refers patient to surgeon.</p> <p>GP prescribes medication and updates medicines list.</p> <p>At the end of the visit, an event summary is created (with the consumer's consent) for submission to HealthConnect.</p>	<p>Increased GP efficiency through more timely availability of information.</p> <p>Results available for sharing with other clinicians – potentially reducing unnecessary services.</p> <p>Complex medications information automatically shared.</p> <p>Minimal disruption to existing business processes.</p>
<p>Specialist Consultation:</p> <p>Surgeon accesses HealthConnect to review patient history and recent visit/test result information. Confirms details with patient.</p>	<p>Improved safety through availability of patient details in HealthConnect, and confirmation by patient.</p>

¹⁹ The assistance of the North Queensland Trial team is acknowledged in the development of this table.

Indicative HealthConnect Processes	Indicative Impacts, Leading to Positive Health Outcomes
<p>Pre-Admission:</p> <p>Anaesthetist reviews HealthConnect record for patient – assessing anaesthetic risk, and if further tests are required.</p>	<p>Improved safety through access to more detailed patient history and recent events.</p> <p>Decreased incidence of unnecessary services if tests already completed prior to admission to hospital.</p>
<p>In Hospital:</p> <p>Patient identity confirmed at hospital admission and again by peri-operative staff.</p> <p>Hospital clinicians prepare a discharge summary, which includes clinical events and medications during hospital stay, created as an event summary to HealthConnect.</p>	<p>Increased patient safety.</p> <p>Decreased incidence of adverse events, such as adverse drug events, and notification of anaesthetic risk.</p> <p>Decreased potential for adverse anaesthetic events.</p>
<p>Post discharge GP consultation:</p> <p>GP accesses hospital discharge summary in HealthConnect and provides appropriate ongoing care.</p>	<p>Increased efficiency of sending discharge summary to GP.</p> <p>Increased capacity to continue coordinated care.</p> <p>Increased GP efficiency.</p> <p>Increased safety through access to discharge medication information.</p>
<p>Post discharge – Community Nursing</p> <p>Community nurse accesses HealthConnect to assist with appropriate management and care planning.</p>	<p>Increased capacity to continue coordinated care.</p> <p>Increased efficiency of community nursing.</p>

This scenario illustrates the significant impact that the availability of key information can make to health care processes. Key processes, impacts and outcomes from the implementation of HealthConnect are documented in detail in Appendix B .

The analysis in this appendix clearly demonstrates the impacts that HealthConnect will have on health care processes and a strong link to subsequent health outcomes.

The impacts and outcomes identified above and those developed further in Appendix B require the development of appropriate performance indicators to measure the effects of the program and the collection of baseline data. This is further addressed in Chapter 6.

An assessment of a suitable time period over which the benefits of HealthConnect might be realised is also needed. As noted earlier in this report, the systemic benefits of HealthConnect will only be realised over time, and hence it will be important to focus on those benefits that can be realised in the initial stages of implementation.

4.4.3 Process Efficiencies from the Implementation of HealthConnect

There are considerable consumer and provider efficiencies to be derived from improvements in health care processes enabled through access to key information from the implementation of HealthConnect. HealthConnect will facilitate the transfer of health information in a timely manner across health care settings. Access to this information should enable care providers to deliver a higher standard of care and increase patient safety, which should ultimately deliver improved health outcomes. The ability to access information should also deliver process efficiencies to providers and provider organisations. For consumers, the major benefit flows from improved coordination and management of their health care.

HealthConnect will provide accurate consumer information, when required, in support of clinical and related care. Providing access to information in support of health care is paramount to early acceptance of HealthConnect by both providers and consumers. This will be a significant factor in ensuring that necessary take up levels are reached. Improving the flow of information to clinicians should also improve communication between providers and consumers, and thus further empower consumers in the management of their health care.

Appendix C sets out the National Health Reform Agenda and highlights how HealthConnect can improve information flows and the coordination of care across care settings. The *Indicative Benefits Report* demonstrates that HealthConnect has the potential to improve information flows, and thus the coordination of care, across the health care system. This flow of information across health care settings should in turn facilitate increased patient safety, and enhanced management of complex and chronic diseases.

Access to information may assist providers in making earlier diagnoses, leading to earlier (and possibly fewer) interventions, potentially reduced levels of adverse drug events, and thus improved health outcomes for consumers. An anticipated reduction in time spent searching for patient information may improve provider efficiency. These benefits will not necessarily be realised in financial terms, but rather lead to administrative efficiencies for providers, who can then use these efficiency gains at their discretion.

By making critical health information available at the point and time of care, HealthConnect can reduce the amount of time that providers (or their administrative staff) spend searching for patient information and ordering unnecessary diagnostic tests. For example, if a patient with diabetes is admitted to hospital (and the patient consents to the hospital staff accessing their HealthConnect record), the hospital staff can save considerable time by not having to request information from the patient's GP. In addition, the availability of this information may mean that treating staff have access to recent tests results, and thus repeat tests are not ordered. Moreover, this information may mean that treatment decisions can be made earlier, and that the patient's stay in hospital is shorter than if this information was not available.

There are also important benefits for consumers. If providers have access to recent test results, it may reduce the need for further diagnostic tests, which means that the consumer has fewer out-of-pocket expenses, saves time by not having to attend another provider, and may reduce the discomfort associated with some diagnostic tests. Consumers will also benefit if illnesses are diagnosed and treated earlier, meaning that the consumer may not be subjected to as many interventions or hospitalised to treat the illness. The level of adverse drug events should also be reduced by information about consumer's allergies and current medications being available at the point of care.

4.5 Improving Population Health Outcomes

The *Indicative Benefits Report* indicates that HealthConnect will have a strong positive impact on the efficiency of health care processes, which will ultimately contribute to improved population health outcomes. While this is likely to be achieved in the longer term, it is important to identify areas where early benefits can be achieved, and to focus initial implementation in these areas. The identification of the areas is one of the key functions of the Benefits Realisation Framework.

To aid this process, this chapter provides an analysis of health care needs by disease and population grouping and identifies areas that are recommended for initial implementation. The rationale for this is that the benefits from these groups are likely to be greater over time and realised earlier if there is a concerted focus on them in the early stages of the program's implementation. This will also assist in the overall case for proceeding with investment in HealthConnect.

If these groups are prioritised in the early implementations of HealthConnect then high levels of participation and use in these target groups should be achieved, and cost offsets realised in the longer term.

4.5.1 Population Disease Analysis

HealthConnect will have the greatest impact on those consumers with the highest health care needs and who access a wide range of providers. HealthConnect will have an impact here because those with high health care needs are most likely to have a high number of encounters with the health care system, in turn resulting in a large amount of relevant health information which needs to be communicated between a range of providers. HealthConnect can support the care of these consumers by making it easier for this information to be transferred between providers, and hence improve the coordination of care.

Given the difficulty in objectively measuring those disease and population groups with the highest health care needs, this report has decided to use health care expenditure as an indicator of health care needs. Thus those groups with the highest health care expenditure are assumed to be those groups with the highest health care needs.

The AIHW report *Health System Expenditure in Australia, 2000-01* found that Australia spent \$49.17b per annum in allocated recurrent expenditure across all diseases.²⁰

²⁰ Of total health expenditure in 2000-01, \$49.17b (86%) was attributable to disease groups, with the remaining \$11.7b unable to be allocated by disease groups. This sum includes expenditure on community and public health

An analysis of the data, presented in more detail in Appendix F , indicates that:

- 11.2% of total health expenditure was on cardiovascular disease;
- *Australia's Health 2004*²¹ indicates that the major burden of disease in Australia arises from long-term conditions such as cardiovascular diseases. It notes that “cardiovascular disease is still the leading cause of death for both males and females with about one in five Australians having cardiovascular problems in 2001 and 1.1 million Australians having a disability as a result”;
- 9.5% of total expenditure was on musculoskeletal diseases, such as arthritis; and
- 1.7% of total expenditure was on diabetes mellitus.

The conditions noted above are all examples of chronic and complex diseases, and all have relatively high proportions of health care expenditure in Australia. Other chronic and complex diseases also have relatively high proportions of health expenditure, suggesting that they have high health care needs, and hence would benefit significantly from the implementation of HealthConnect.²² In turn, given the high expected benefits to these groups from inclusion in HealthConnect, there is a strong case for focussing on these disease groups in the initial implementations.

HealthConnect can assist in managing chronic and complex diseases, such as cardiovascular disease and diabetes, through facilitating the flow of information between different providers, which in turn will assist with the coordination of care.

Table 3 indicates some of the characteristics of good diabetes management, as an example of a chronic disease, and highlights how HealthConnect can contribute to managing this condition.

Table 3: HealthConnect Contribution (Diabetes)²³

Characteristics	HealthConnect Contribution
Use a population-based approach	Very High – HealthConnect will support this management characteristic in an efficient manner. The approach proposed is to engage all providers, consumers and settings through HealthConnect. As a consequence it would not be unreasonable for HealthConnect to claim the majority of the benefit that may flow from this characteristic.

services, health administration, patient transport and so on. Equivalent data for 2001-02 is not yet available. See *Australia's Health 2004*, p253f.

²¹ See *Australia's Health 2004*, p10.

²² The major burden of disease in Australia arises from chronic conditions such as cardiovascular disease, cancers, mental illness and nervous system disorders. The coexistence of two or more conditions is highly correlated with age. See *Australia's Health 2004*, p10.

²³ Adapted from the *Indicative Benefits Report*, p55.

Characteristics	HealthConnect Contribution
Incorporate the patient as an active participant	Very High – consumer empowerment is essential to effectively manage chronic diseases. HealthConnect has the capacity to provide this together with informing consumers and providers of best practice. Again it would not be unreasonable to allocate the majority of benefit to the facilities that HealthConnect will provide.
Involve proactive contact, surveillance and reminders	Medium – HealthConnect can support this proactive approach. However, the contribution is not as significant and as such the HealthConnect contribution is viewed to be moderate.
Implement consistent follow-up procedures	Medium – as above can support this proactive approach.
Share cross-team management responsibilities	High – HealthConnect will greatly contribute to the communication between team members but may only claim a balanced share of the credit.
Plan office visits	Low – Tends to be administrative and logistical in nature and therefore not likely to be benefited by clinical related data in HealthConnect.
Use information systems	Very High – an essential element. As per the first two characteristics it would not seem unreasonable to claim the majority of benefit.

4.5.2 Population Age Group Analysis

Figure 6 presents annual Australian health expenditure by age group, for 2000-01.

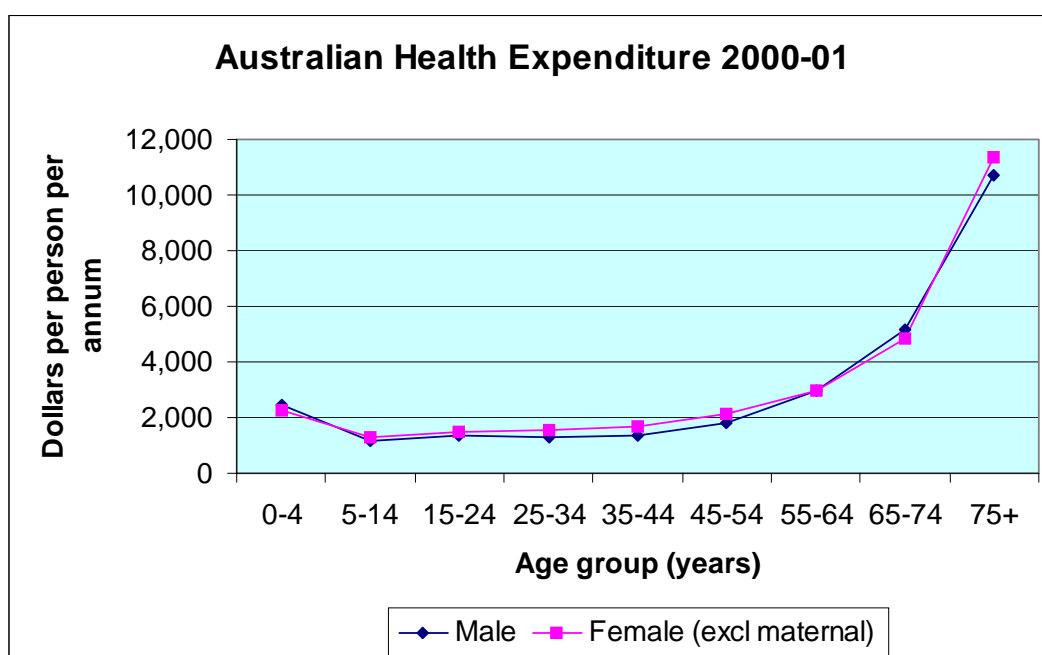


Figure 6: Australian Health Expenditure by Population Age Group²⁴

Figure 6 shows that males and females in the 0-4 years age group have annual health expenditure of \$2,427 and \$2,247 per person respectively.

For this age grouping:

- The availability to clinicians of HealthConnect records for parents, new-borns and young children should lead to improved diagnosis and clinical decision making;
- Another advantage of focusing early implementations of HealthConnect on the 0-4 years age group is to establish an initial health record for ongoing healthcare management for a new generation of Australians, with minimal cost to providers associated with capturing an initial patient history from the parent; and
- Focusing HealthConnect on the 0-4 years age group will also provide support for childhood immunisation strategies.

Health expenditure on males and females is approximately \$3,000 per annum for persons aged 55-64 years and increases to \$10,719 per person for males and \$11,348 per person for females aged 75+ years. This suggests that these groups have comparatively high health care needs, and require services from a range of providers, thus increasing the benefits that HealthConnect can deliver.

For this age grouping, the availability of current HealthConnect records for the range of treating clinicians will assist in identifying co-morbidities. It may also result in better medication management, increased patient safety and enhanced coordination of care,

²⁴ Developed from data contained in Table 7, *Health System Expenditure on Disease and Injury in Australia, 2000-01*, Australian Institute of Health and Welfare Canberra, p21.

particularly across the different care settings in which those in older age groups tend to be cared for, such as aged and community care.

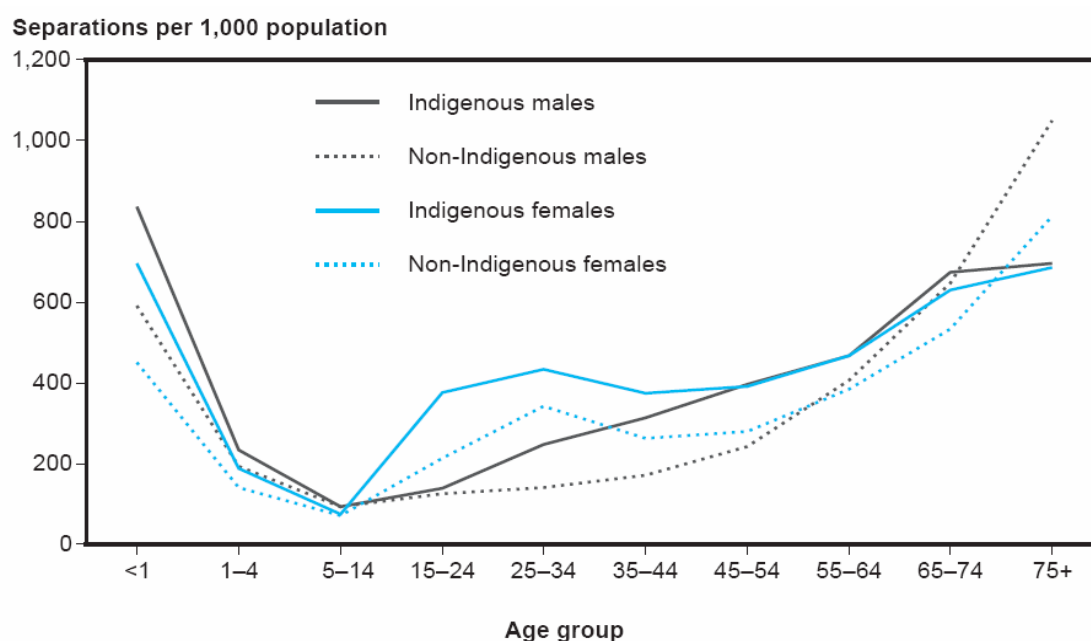
This analysis suggests that parents with new-borns and children aged 0-4 years and people aged 55 + should be initial priority areas for HealthConnect implementation planning.

4.5.3 Aboriginal and Torres Strait Islander Peoples

The above discussion suggests that HealthConnect focus its initial implementation on those with chronic and complex conditions, such as cardiovascular disease and diabetes. In this context, it is important to note that many Aboriginal and Torres Strait Islander peoples are affected by those chronic and complex conditions outlined above, but at much younger ages.

Figure 7 overleaf shows that Aboriginal and Torres Strait Islander people across every age group are more likely than other Australians to be hospitalised for most diseases and conditions, indicating a higher occurrence of acute illness.

Australia's Health 2004 found that haemodialysis for kidney disease was the most common procedure for Indigenous people in Australian hospitals in 2001-02, and that the rate of this procedure among Indigenous males and females was respectively 8 and 15 times as high as for the rest of the Australian population. Moreover, the death rate from chronic kidney disease was seven times higher than the rate for non-Indigenous Australians.²⁵



Note: There is a certain proportion of hospitalisations for which Indigenous status is not stated. Because it is unknown what proportion of these is likely to be Indigenous, they have been excluded from the calculation of rates.

Figure 7: Hospital separation rates, all causes (excluding dialysis), 2001-02²⁶

²⁵ See *Australia's Health 2004*, p199.

²⁶ See *Australia's Health 2004*, pp198-99.

Figure 8 indicates that diabetes is also a significant health problem for Aboriginal and Torres Strait Islander peoples, with relatively high rates of Type 2 diabetes. Moreover, the table also shows that Indigenous Australians have a higher incidence of diabetes at earlier ages than do the remainder of the population.

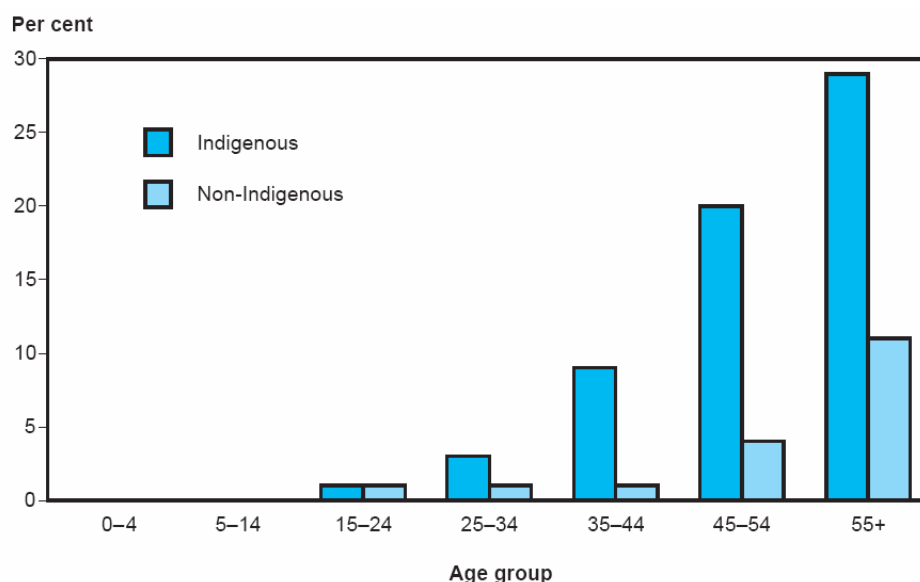


Figure 8: Self-reported diabetes, 2001²⁷

The AIHW suggests that the death rate associated with diabetes provides an indicator of the burden of disease in Aboriginal and Torres Strait Islander peoples.²⁸ Age specific death rates for diabetes (shown in Figure 9) show that from age 25 onwards, the death rate for Aboriginal and Torres Strait Islander peoples is dramatically higher than that of the non-Indigenous population. The diabetes-related death rate for Aboriginal and Torres Strait Islander people aged 35-44 and 45-54 is 27 to 35 times that of the non-Indigenous population.

Figure 8 highlights the fact that Aboriginal and Torres Strait Islander peoples are affected by diabetes at earlier ages than the general population. If these conditions are not treated promptly and effectively, they result in high early mortality rates. This is borne out in Figure 9 below.

²⁷ See *Australia's Health 2004*, p200. It is also worth noting here that diabetes is generally regarded as both under-reported and under-diagnosed. Hence, the data displayed in this figure probably underestimates the true prevalence of diabetes for both Aboriginal and Torres Strait Islander peoples and the remainder of the population.

²⁸ See *Australia's Health 2004*, p200.

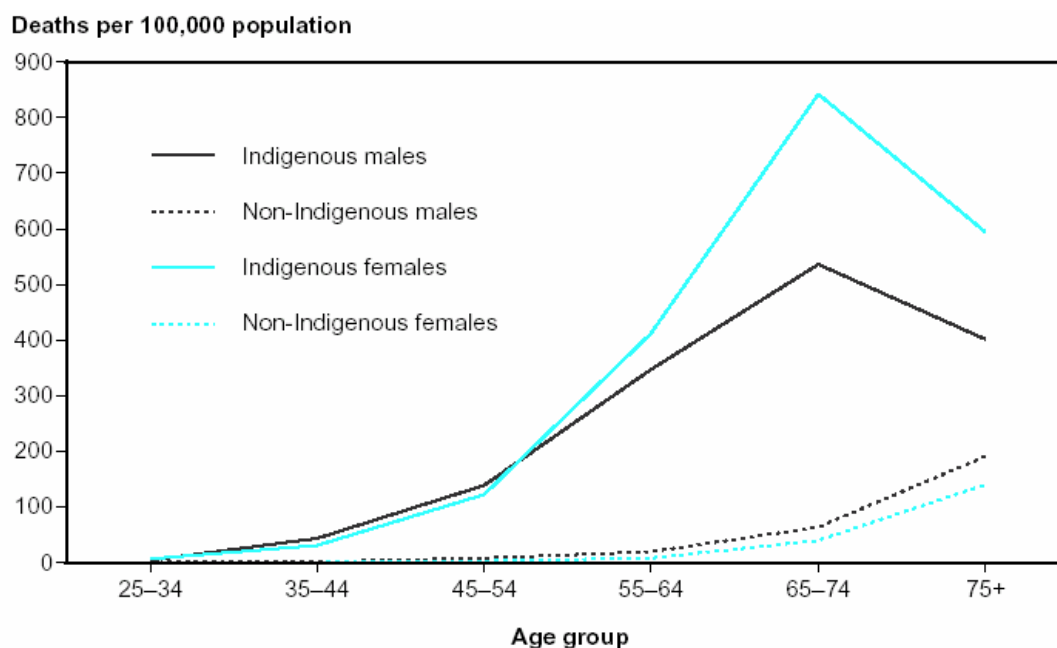


Figure 9: Diabetes Age-specific Death Rates, 1999-2001²⁹

The participation of Aboriginal Health Services and Aboriginal and Torres Strait Islander peoples in HealthConnect will, through increased access to health information, facilitate more coordinated care of patients with complex and chronic conditions. In the longer term, this is expected to lead to better health management and potentially to decreased mortality rates.

The relative health status of Aboriginal and Torres Strait Islander peoples compared to non-Indigenous people provides a strong rationale for their early inclusion in HealthConnect. Aboriginal and Torres Strait Islander people will require culturally appropriate communication and support strategies, which needs to be recognised in order to encourage take up and hence maximise benefits.

4.5.4 Recommended Initial Priority Groups

The preceding analysis has highlighted the reasons why particular disease and population groups should be prioritised as part of the initial HealthConnect implementation. These recommendations are based on the findings presented above that take into account those groups with high health care needs where HealthConnect is considered to offer significant process impacts. The initial marketing, enrolment and registration processes for HealthConnect should be targeted at the groups identified above in order to optimise early take up of HealthConnect and hence maximise long-term and sustainable benefits.

This approach will assist in creating the necessary consumer and provider critical mass for HealthConnect in large population catchment areas.

The disease and population age group recommended for initial implementation focus therefore are:

- The very young (0 – 4 years), and particularly new-borns and their parents;

²⁹ See *Australia's Health 2004*, pp200-201.

- People diagnosed with chronic and complex conditions and co-morbidities, such as cardiovascular disease and diabetes, which are in higher proportions in the following population groups:
 - Older age groups (55+ years); and
 - Aboriginal and Torres Strait Islander peoples.

The areas above are recommended only to provide a focus for initial implementation planning for HealthConnect, and are not intended to exclude any eligible consumers. However, as it is not feasible to launch HealthConnect with the broadest range of services and to initially engage all provider types, it is helpful for program planning to have an optimum place to start. The list above has been developed to assist with this thinking.

While mental illness is a high cost/impact health area, it is recognised that there will be some difficulty and sensitivity in actively targeting those with mental health conditions for take up. This is due mainly to heightened privacy considerations and possible challenges around consent and other requirements for participation. For this reason, mental illness is not recommended as an initial priority group for HealthConnect implementation.

4.6 Improving Research and Practice

The implementation of HealthConnect will create the capability to produce integrated, de-identified health and administrative data sets, bringing together information currently collected in many separate administrative and research units. This information can inform strategies for improving the efficiency and effectiveness of the health system and individual patient outcomes. Key benefits identified by the Department of Health and Ageing from integrated health data include:

*Monitoring of outcomes of interventions and treatments at the state, territory, institutional and provider level; early detection of adverse events from drugs and surgical interventions; cost-effectiveness analysis of interventions to support rational choices in funding; assessment and monitoring of individual quality initiatives such as accreditation; detection of population sub-groups requiring additional health care services; device, disease and intervention registers created as a by-product of a linked health information resource; and improved surveillance and early detection of disease and bio-terrorism events.*³⁰

Voluntary participation in HealthConnect means that total population data sets may not be realistic. It will be necessary to achieve a high level of take up of HealthConnect by both providers and consumers to make available useful data for secondary uses. If HealthConnect implementations can achieve high, rapid and early take up by those consumers with chronic and complex conditions and their health care providers, more complete secondary data sets relating to those groups will be available.

HealthConnect data could contribute to the evaluation of clinical interventions for specific population groupings and assist in providing the evidence for the cost effectiveness of disease prevention strategies.

³⁰ Department of Health and Ageing, *Annual Report 2002-03*, Canberra. Available at <http://www.health.gov.au/pubs/annrep/ar2003/pdf/part1.pdf>

The secondary uses of data in electronic health records also include:

- Quality and safety management — continuous quality improvement studies, utilisation review and performance monitoring;
- Monitoring (peer review, clinical audit, outcomes analysis), benchmarking and accreditation;
- Education — of students, consumers, and clinicians;
- Research — development and evaluation of new diagnostic modalities, disease prevention measures and treatments, epidemiological studies, population health analysis;
- Public and population health planning and service design;
- Policy development — health statistics, trend and casemix analysis;
- Health service management — resource allocation and management, cost management, reports and publications, marketing strategies, enterprise risk management; and
- Billing/finance/reimbursement — insurers, government agencies, funding bodies.³¹

It should be noted that the voluntary nature of participation in HealthConnect for both consumers and providers will mean that fully populated representative data sets are unlikely to be captured for many years following initial implementation.

³¹ Communication from Dr Chris Kelman, Medical Adviser to the Department of Health and Ageing, July 2004.

5 Implications for HealthConnect Implementation

This chapter discusses the implications of the Benefits Realisation Framework for the implementation planning of HealthConnect.

5.1 Priorities for Initial Implementation Planning

The Benefits Realisation Framework recommends the following disease and population groups as the primary focus for initial implementation planning:

- The very young (0 – 4 years), and particularly new-borns and their parents;
- People diagnosed with chronic and complex conditions and co-morbidities, such as cardiovascular disease and diabetes, which are in higher proportions in the following population groups:
 - Older age groups (55+ years); and
 - Aboriginal and Torres Strait Islander peoples.

To address these priority groups in a way that ensures maximum benefits, the implementation of HealthConnect will need to focus take up strategies on the providers that care for these groups. Building on the *Indicative Benefits Report*, this report identifies the providers and the care settings in which HealthConnect can provide benefits. Specific strategies to engage these providers need to be developed for take up and participation.

In addition, the operationalisation of the Benefits Realisation Framework needs to be underpinned by a national governance arrangement with defined roles, responsibilities and accountabilities for benefits realisation and ongoing management and evaluation of HealthConnect.

The HealthConnect Implementation Approach, which flows from the Benefits Realisation Framework, needs to embrace a change program across the national population base, including consumers and providers. In addition, it will need to coordinate the more technical aspects of HealthConnect that create the capabilities needed to support changes in work practices, information storage and information provision services used by clinicians and researchers to improve individual as well as national health outcomes.

Another critical aspect of implementation will be the rate of take up by consumers, and the geographical spread of this take up. If a significant proportion of a provider's patients are enrolled in HealthConnect, then that provider will increasingly build the use of HealthConnect into his or her work practice. In time, this will assist in the realisation of process efficiencies. In this sense, a critical mass of consumers using HealthConnect facilitates a change in the provider work practices, which will assist in the delivery of benefits from the use of the system. However, if only small numbers of a provider's patients are registered in HealthConnect, then it will take longer for that provider to build the use of HealthConnect into their work practice, and hence the benefits from process efficiencies will take longer to realise. In this sense, change management and benefits realisation are inseparable. Their relationship is interdependent – benefits cannot be achieved without change, and change will not be sustainable without benefits.

The impact of geographical spread is also important. It is simply not possible to implement a program of this size and scale everywhere at once. The implementation of HealthConnect will need to be carefully staged to ensure that critical mass is developed in each region before further implementations are undertaken. In turn, it makes sense to initially focus on regions where a large number of consumers have high and complex health care needs (i.e. those with complex and chronic diseases). As discussed above, this will facilitate work practice changes for providers, and hence enable benefits to be realised sooner.

However, it is important to recognise that systemic benefits of HealthConnect will not be delivered immediately, and that even some of the benefits at the local level will take time to realise. It will also be difficult to attribute benefits that are realised solely to HealthConnect. Nevertheless, it will be important to have a series of performance indicators in place (and to have collected baseline data) to measure those benefits that are realised.

Adopting the key features of the Benefits Realisation Framework in the implementation of HealthConnect will maximise take up and contribute to achieving improved health outcomes for the Australian community.

5.2 HealthConnect Strategic Results Chain

An important step in developing the Benefits Realisation Framework was developing the HealthConnect Strategic Results Chain, which shows how HealthConnect outcomes will be achieved. A high level graphical representation of the HealthConnect Strategic Results Chain, prepared with the assistance of the HealthConnect Program Office, is presented in overview in Figure 10 below (and in detail in Appendix G). The Strategic Results Chain is a vital ingredient in the Benefits Realisation Framework and the Implementation Approach. It clearly identifies the scope of the program and the changes needed for HealthConnect to successfully realise the desired outcomes.

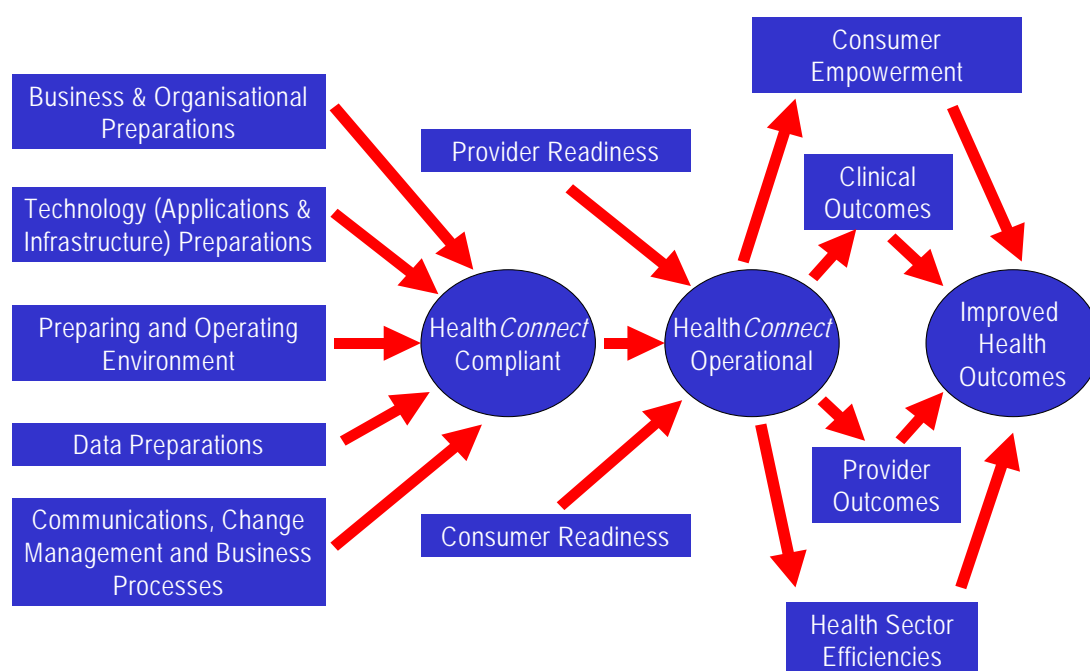


Figure 10: Overview of HealthConnect Strategic Results Chain

The results chain is developed using a modelling technique³² that provides a graphical representation of the events and conditions required to achieve a stated business outcome for a program. It has four components: outcomes, initiatives, assumptions and contributions.

Figure 10 illustrates the range of required initiatives (boxes on the left) that need to be completed to create a compliant HealthConnect environment. Completion of further initiatives designed to establish consumer and provider readiness and participation serve to make HealthConnect operational. These include initiatives designed to achieve the necessary take up and participation by providers and consumers. When the compliant HealthConnect environment is optimally utilised, then consumer, provider and health sector efficiencies together will contribute to the achievement of improved health outcomes.

The HealthConnect Strategic Results Chain is discussed in greater detail in the HealthConnect Implementation Approach.

5.3 Building Capacity to Achieve Benefits

For the benefits of HealthConnect to be realised in the national implementation, the Australian and State and Territory governments need to cooperate and provide national leadership. In addition, stakeholders need to sponsor and develop agreed governance arrangements, and implement business and funding models for the initial development and ongoing operation of HealthConnect.

The HealthConnect Strategic Results Chain, as detailed in Appendix G, points to the need to establish the policy, business change and technical capabilities at the national and local levels. This assumes that the Australian and State and Territory government and industry resources will be available as and when needed.

The Implementation Approach identifies the need to establish an overarching benefits realisation governance and measurement capability at both the national and local level. If this requirement is not fully met, then there is a risk that benefits will not be identified, measured and harvested, which will negatively impact on ongoing support for the program.

There is also a requirement to establish an economic evaluation protocol to enable the identification of benefits and costs, and performance indicators during the early implementations of HealthConnect. This could be undertaken in conjunction with a Whole of State implementation.

The establishment of soundly based benefits realisation governance arrangements will underpin the HealthConnect Outcomes Realisation Plan currently being developed by the HealthConnect Program Office. In addition, to realise benefits, HealthConnect needs to:

- Identify provider business process changes and implement appropriate change management strategies;
- Identify the interface issues, and develop and implement a vendor management strategy;

³² See Thorp J., *The Information Paradox - Realising the Benefits of Information Technology*, McGraw Hill 2003, p46.

- Engage the State and Territory governments in early implementations of HealthConnect;
- Develop and agree costing and funding models for the initial deployment and ongoing operation of HealthConnect in the States and Territories; and
- Develop and implement an approach to harvesting the benefits and gain sharing among stakeholders.

5.4 Implications of Not Building the Required Capacity

The implications of failing to build this capacity include:

- The necessary capabilities to enable HealthConnect will not be in place;
- High levels of consumer and provider take up will not be achieved, which means that benefits will not be realised;
- Information from State and Territory government feeder systems will not be uploaded into HealthConnect;
- HealthConnect not contributing to Health Ministers' requirements for improved health care quality and increased patient safety; and
- Long-term health outcomes will not be enhanced.

6 Benefits Realisation Governance and Economic Evaluation

This chapter describes the features of governance that are necessary to support HealthConnect's benefits-driven approach to implementation and ongoing operations, and also introduces a model for economic evaluation. It includes:

- Principles and features of governance that relate to benefits realisation;
- Descriptions of roles and responsibilities relating to governance, and related management processes; and
- An approach to economic evaluation of HealthConnect and an outline of initial steps required to undertake this work.

6.1 Accountability and Governance

HealthConnect is a significant Australian, State and Territory investment program involving service integration across government jurisdictions and the private sector. HealthConnect may be regarded as also part of a 'value network' with the consumer at its centre.³³

To be seriously considered and supported, HealthConnect needs to be compliant with public sector accountability, governance and economic evaluation arrangements. In addition, appropriate governance arrangements will assist in realising the potential benefits and ensuring that HealthConnect is accountable to stakeholders and sustainable in the longer term.

New and expanded roles and responsibilities will be required to ensure that the benefits from the implementation of HealthConnect are realised and harvested nationally, at the State and Territory government level, in the work place and by consumers.

6.2 HealthConnect Benefits Realisation Governance

To effectively realise the benefits identified in this Benefits Realisation Framework, an appropriate governance structure, together with clearly articulated principles and roles/responsibilities must be in place.

6.2.1 Governance and Benefits-related Principles

The Australian National Audit Office has outlined principles of public sector governance, which have been adapted here for the implementation of HealthConnect. These include:

- **Accountability** – being answerable for decisions made by the HealthConnect governing body and having meaningful mechanisms to ensure adherence to all applicable standards and achievement of business outcomes;

³³ Australian Government Information Management Office, *Future Challenges for e-Government*, Vol 1, Canberra, 2004. p9. For further information see http://www.agimo.gov.au/_data/assets/file/31896/Future%20Challenges%20for%20E-government,%20Volume%201.pdf

- **Transparency** – clear roles and responsibilities and clear procedures for decision-making and the exercise of power;
- **Integrity** – acting impartially, ethically and in the interests of HealthConnect, and not misusing information acquired through a position of trust;
- **Stewardship** – using every opportunity to enhance the value of public assets and institutions that have been entrusted to care;
- **Efficiency** – the best use of resources to further the aims of the program with a commitment to evidence-based strategies for improvement; and
- **Leadership** – from the governing body and executive leadership of HealthConnect is critical to achieving a strong commitment to good governance.³⁴

6.2.2 Features of Good Benefits-related Governance

The HealthConnect Benefits Realisation Framework requires full cycle governance with active and clear accountability. To realise the benefits from the implementation and operation of HealthConnect, the governance arrangements should have the following features:

- A governing body to make and manage decisions on portfolio and program investments in HealthConnect at the national and state and territory level;
- The governing body recognises the complete HealthConnect value network – all the public and private sector assets that HealthConnect can leverage to achieve the desired business and health outcomes;
- A focus on the overall business management of the portfolio of national and state and territory based HealthConnect programs;
- Implementing HealthConnect within an existing framework of Commonwealth and State and Territory legislation;
- Development of a Program or Value Management Office to provide operational support to HealthConnect. The Office should also provide leadership and coaching in value and benefits management to the HealthConnect governing body;
- Assigning accountabilities to Australian and State and Territory government sponsors, business managers and owners;
- Disciplined, accountable management of a series of strategic and tactical investments in HealthConnect trials and implementation programs;
- Adopting the principles of full cycle governance;
- Implementing portfolio management practices and supporting performance monitoring tools into the HealthConnect Program Office;

³⁴ Adapted from Australian National Audit Office, *Public Sector Governance and the Individual Officer*, Guidance Paper No 1, Better Practice Guide, Canberra, 2003, p2.

- Implementing benefits realisation monitoring systems to identify and measure the impacts upon clinical processes; and
- Implementing provider business change programs designed to enable clinicians to become business owners of HealthConnect.

These features designed to achieve value for HealthConnect are illustrated in the figure below.

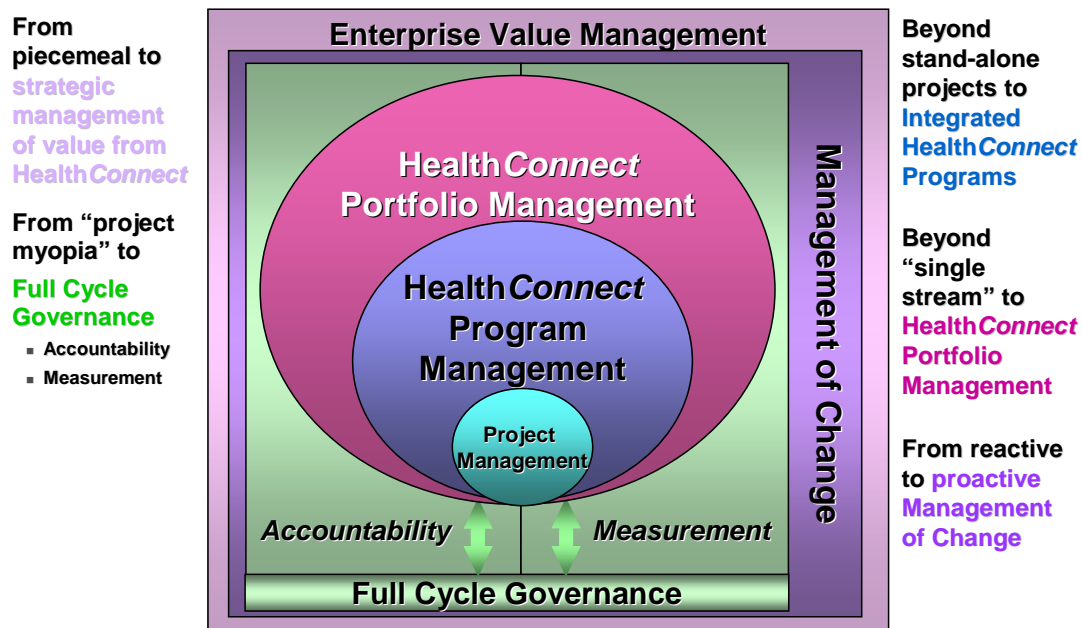


Figure 11: The Critical Success Factors for Implementation and Operation of HealthConnect

New concepts introduced in Figure 11 above are based on Fujitsu’s Benefits RealisationTM methodology adapted for HealthConnect. These concepts are explained below:

- **Enterprise value** – the relative worth or importance of a HealthConnect wide investment for key stakeholders;
- **Full cycle governance** – an integrated management system that operationalises the concepts of program and portfolio management, distinguished by its long timeframe, which supports management of the benefits realisation process from conception of projects to the harvesting of benefits. The governance arrangements also include the existing and enabling legislative and administrative frameworks that underpin HealthConnect;
- **Project** – a structured set of activities concerned with delivering a defined HealthConnect capability based on an agreed schedule and budget. The capability in and of itself has no value, it is only when it is used as a result of a comprehensive program of change that value from the implementation of HealthConnect will be realised;

- **Program** – a structured grouping of projects designed to produce clearly identified business value. The business value of one HealthConnect program will align in varying degrees to strategic objectives and may be dependent on other programs. In order for HealthConnect to realise the greatest value across all programs, they must be managed by the governing body as a portfolio of programs; and
- **Portfolio** – is a suite of HealthConnect business programs managed to optimise overall enterprise value. The portfolio must be continually reviewed and managed to ensure that it is balanced to reflect the strategic priorities of Australian Health Ministers and the HealthConnect governing body and that risks are mitigated and synergies exploited across programs. A key benefit of portfolio management is that it forces shared visibility of investments across the enterprise.

6.2.3 Roles and Responsibilities

The challenge for HealthConnect will not be implementing technology, but implementing IT-enabled business change. Clearly defined roles and responsibilities will facilitate this process.

The HealthConnect **Program or Value Management Office** should be responsible and accountable for a number of benefits realisation related functions, including:

- Arranging agreements between the Australian Government and individual State and Territory Governments and third parties for the implementation and operation of HealthConnect. The agreements should reflect the strategic intent of HealthConnect and the requirement for monitoring benefits realisation and facilitating evaluation;
- Monitoring the policies of Australian, State and Territory Governments and developing strategies to optimise the contribution of HealthConnect to the wider e-health agenda;
- Developing the funding and operating models for HealthConnect;
- Supporting the HealthConnect governing body by providing oversight, management and monitoring of HealthConnect investment activities to ensure that business benefits are realised and health outcomes are achieved for the Australian community;³⁵
- Liaison with HealthConnect advisory groups;
- Developing and implementing the benefits realisation plan;
- Maintaining the benefits register;
- Developing the HealthConnect evaluation strategy; and
- Developing an economic evaluation protocol.

³⁵ The accountabilities of CEOs of Australian Government agencies are prescribed under Section 44 of the *Financial Management and Accountability Act, 1997*. Similar provisions exist in State and Territory legislation, such as under Section 22, Part 2 Division 6 of the *Tasmanian Financial Management and Audit Act 1990* and Section 13 of the *Victorian Public Sector Management and Employment Act 1998*. Each state and territory has similar public sector financial management legislation.

The governance structures (legislation, regulations, agreements, governing body and HealthConnect procedures) at the national and local levels will support the sharing of responsibility for generating benefits from the implementation of HealthConnect. The HealthConnect governing body could be assisted by the following advisory groups:

- HealthConnect Clinical Advisory Group;
- HealthConnect Evaluation Advisory Group;
- HealthConnect Architecture Advisory Group; and
- Any other groups that may be established to work towards the implementation of HealthConnect.

The **Program Sponsor** (possibly through HealthConnect governing body) will have responsibility for investments in HealthConnect.

In addition the functions (as distinct from positions) of Benefits Manager and Benefits Owners are also further defined as follows.

- **Benefits Manager** is responsible for maintaining details of benefits achieved, and reporting of the benefits status. This is achieved by the use of:
 - The strategic results chain - keeping it current with changing outcomes, measures, targets, accountabilities and risks; and
 - The benefits register – recording and reporting of actual performance of the agreed measures.
- **Benefits Owners** are the business managers at the national and state and territory levels identified as the owner for specific outcomes identified in the strategic results chain. A benefits status report might be used to ensure the outcome is actually realised, or to respond and act in circumstances where corrective/remedial action is necessary eg a change in the specific scope of a HealthConnect program.

6.2.4 Benefits Realisation Management Capability and Processes

While the Australian Government will have overall interest in realising the benefits from the implementation of HealthConnect, the State and Territory governments will also have an interest in, and responsibility for, realising the benefits of their respective implementations.

These arrangements need to be reflected in agreements between the Australian Government and the respective State and Territory governments for the Whole of State implementations.

Each State and Territory would need to establish the necessary benefits realisation management capability. The individual State and Territory HealthConnect implementations would therefore be responsible for, in line with national frameworks, establishing local governance arrangements; establishing local performance indicators and collecting data (including baseline data); monitoring realisation of local benefits; and conducting or participating in reviews and evaluations of local implementations.

Reporting to the HealthConnect governing body, both against the milestones of the Implementation Plan and against the Benefits Realisation Framework, will be facilitated through development of performance indicators for evaluation and monitoring purposes.

To support this process, a benefits register will need to be developed to link the project initiatives to the intermediate and longer-term health outcomes identified in the strategic results chain. The benefits register will not be a static document. It will evolve with the development of the agreements and implementation experience. The manner in which the benefits register underpins the HealthConnect benefits realisation governance arrangements is illustrated in the following diagram.

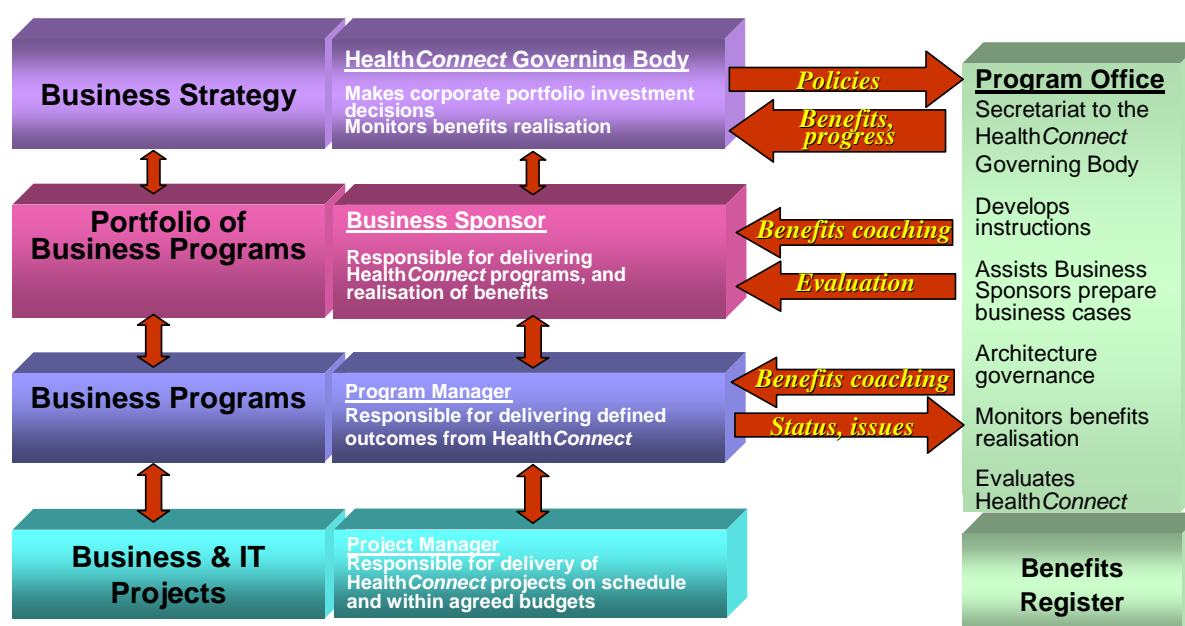


Figure 12: Role of the Governing Body in Full Cycle Governance of HealthConnect

6.3 Economic Evaluation Approach

Appendix B identifies a number of key outcomes that should be achieved through an early focus on supporting clinical processes in the implementation of HealthConnect. The main benefits anticipated are consumer and provider process efficiencies, resulting in reductions in health care expenditures and improvements in personal health (longer and better quality life).

Measurement of the extent to which these outcomes have been achieved is an integral component of an ongoing benefits monitoring and benefits realisation process. The performance indicators that underpin the benefits realisation framework will also contribute to planning for a formative economic evaluation to be commenced in 2005.

Adopting an economic evaluation approach to benefits realisation will establish the necessary rigour in setting performance indicators, gathering data and measurement of effects.

Gathering baseline and ongoing performance data to support an economic evaluation will provide input to the business case and Outcomes Realisation Plan.

6.3.1 Economic Evaluation

Economic evaluation is the systematic comparative analysis of alternative courses of action in terms of their costs (resource use) and their consequences. The aim of an economic evaluation of HealthConnect would be to inform decisions by the HealthConnect governing body regarding the best way to use limited resources. The principles of economic evaluation involve identifying the alternative interventions being evaluated, then measuring and valuing the costs and consequences (outcomes) of these alternatives.

For example, economic evaluation is a valid option when the objective is to choose between the implementation of HealthConnect in a rural and remote setting or a major urban centre.

6.3.2 Social Welfare and Efficiency Considerations

In the practice of economic evaluation the first step is to distinguish ethical, distributional and other intangible benefits from those that are more readily measured, viz, those that are associated with the use of real resources. Anything contributing to social welfare gains from the implementation of HealthConnect could be included in an analysis of benefits. In practice, this broad objective may be difficult to achieve because ethical and intangible considerations are often difficult to quantify. Many economic analyses are concerned with costs and benefits where there are no particular ethical issues –i.e. there is ‘distributive neutrality’.³⁶

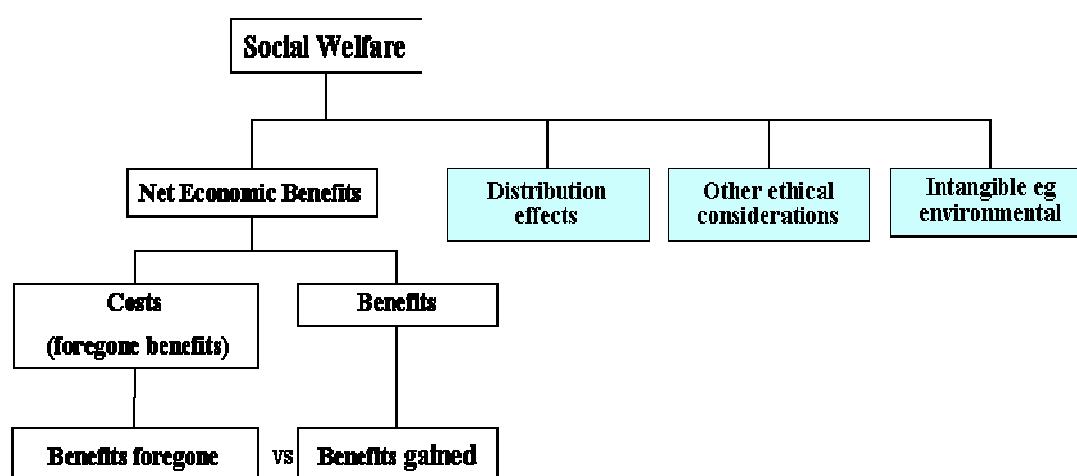


Figure 13: Elements of a Social Welfare Benefits Model

A peculiar characteristic of economic evaluation is its emphasis on social efficiency. In this regard, much of health care involves social decisions about the efficient use of society's resources.³⁷ HealthConnect would be warranted from an economic perspective if its 'net social benefit' were positive.

³⁶ Richardson, J., *The Economic Framework for Health Service Evaluation and the Role of Discretion*, paper presented to 1999 Health Outcomes Conference, Melbourne, 1999. Available at <http://www.buseco.monash.edu.au/centres/che/pubs/wp105.pdf>

³⁷ Carter, R and Harris, A., 'Evaluation of health services', in Mooney, G. H., and Scotton R. B. (eds), *Economics and Australian Health Policy*, Allen & Unwin, Sydney, 1998, pp 154-171.

Benefits realisation from the implementation of HealthConnect involves the measurement of outcomes often expressed as increases in efficiency and effectiveness and improvement in health status. An analysis of the attribution of cost offsets from HealthConnect would form part of planning for, and conducting, both formative and summative evaluations of HealthConnect.

6.3.3 Progressing an Economic Evaluation for HealthConnect

6.3.3.1 Rationale for an Economic Evaluation of HealthConnect

An economic evaluation is normally undertaken to address questions of:

- “allocative efficiency” (i.e. whether an intervention should be undertaken compared to other uses for the available funds); and/or
- “technical efficiency” (i.e. how a selected intervention should be implemented).

Technical efficiency issues tend to focus on what resources should be committed to what aspects of the intervention design or pathway of activities. Analysis is undertaken to identify cost and outcome drivers and how project outputs/outcomes change as resources are expanded or contracted. If there are specific technical efficiency questions to be addressed in HealthConnect, then an economic evaluation could be designed around those specific project issues and implemented as part of the Tasmanian or South Australian implementations.

Given the multi-layered nature of HealthConnect, these technical efficiency issues may occur at the national level (nature and scale of repositories; nature and scale of national registration systems for providers and consumers; incentives to encourage participation; connectivity issues; etc); at the State and Territory level (issues around patient information source systems in hospitals etc); and at a local level for health service providers and for consumers.

For HealthConnect a decision has already been made to proceed with implementation, but that does not necessarily mean that there is no allocative efficiency rationale for an economic evaluation. While the project has a strong intuitive logic underpinning potential benefits, the efficacy base is weak in terms of quality evidence in Australian conditions. There may therefore be a strong rationale to develop the efficacy/efficiency credentials of the project to underpin a business case for further funding.

Similarly, there may be a strong advocacy rationale for the “value-for-money” credentials of HealthConnect to be demonstrated to the various stakeholders (Australian and State and Territory Governments; health service providers; consumers, etc). An economic evaluation could be undertaken using a layered perspective design (i.e. “provider” plus “consumer” plus “third-party funder” leading to “health sector” and then “society”) to achieve this.

Over and above these conventional reasons for an economic evaluation, there may also be more pragmatic reasons for conducting a partial or complete economic evaluation, viz:

- Adding rigour to the benefits framework and the associated realisation plan (removing double counting; adding sensitivity and uncertainty analysis; matching the realisation plan to the associated costs; calculating potential cost offsets); and
- Informing the Implementation Approach and Plan, calculating minimum threshold levels of participation to warrant further investment and so on.

6.3.3.2 Economic Evaluation Protocol

The purpose of an economic protocol is to ensure suitable rigour and clarity in the choice of methods and associated data collections. The focus in this section is on whether and how an economic evaluation should be undertaken, not the economic methodology that should be employed. The latter requires careful consideration that would be developed in the two steps suggested above (i.e. start with an overview protocol and feasibility assessment; followed by a detailed protocol addressing specific research questions and trial projects).

The overview protocol should address the broad design frame for the economic evaluation. The design frame should identify the specific research questions; the comparators; the study perspective(s); choice of evaluation design (i.e. cost-benefit analysis; cost-utility analysis; cost-effectiveness analysis; Program Budgeting and Marginal Analysis; threshold analysis etc); target population(s); depth and breadth of benefits and costs; cost effectiveness ratios to be reported; and intended audience for results.

It should be noted that the various economic methods are not mutually exclusive and that multiple methods may be necessary to accommodate the project's size, complexity and various stakeholders. The overview protocol should also canvass a practical analytic frame, including timing and staging of the evaluation; data sources and collection instruments; specific projects; economic modelling intended; time horizons and discount rates; sensitivity and uncertainty analysis.

6.3.3.3 Initial Steps

HealthConnect is a complex and multi-tiered project that presents special challenges in considering whether, and if so how, an economic evaluation would be of assistance. It poses challenges of both a theoretical and practical nature. For projects of this complexity, it is sensible to take the following steps before committing to an economic evaluation:³⁸

1. **Be clear on the purpose of an economic evaluation** – particularly what specific policy relevant questions an economic evaluation would address, as well as the intended audience(s) and uses for the results.
2. **Match the complexity of the intended economic methods to the complexity of the questions that need to be answered, paying careful regard to the decision context.** Do this in three steps, viz:
 - Develop an early overview of the economic protocol that addresses the broad design frame and key aspects of the analytic frame;
 - Undertake consultations with key stakeholders to ensure it meets the needs established in (1); and only then
 - Proceed to a detailed economic protocol using an accepted format, such as the Drummond ten questions.³⁹ [Note that commissioning of a detailed protocol should also be contingent on steps (3) and (4) below.]

³⁸ Advice from Assoc. Prof. Rob Carter, University of Melbourne, June 2004.

³⁹ Drummond M, O'Brien B, Stoddart G and Torrance G., *Methods for the economic evaluation of health care programs*, 2nd ed., Oxford University Press, Oxford, 1977, pp 45-50.

3. **Consider the feasibility issues** associated with the evaluation – particularly
 - Whether the evaluation can be made tractable by staging the evaluation tasks and focusing the data collection around specific pilot or implementation projects such as those being conducted in Tasmania and South Australia;
 - Whether funding and suitable expertise is available to carry it out (both within the pilot projects and at the national coordination level);
 - Whether a staged evaluation will deliver results in a timely fashion to inform the questions identified in (1);
 - Whether appropriate leadership and management arrangements for the evaluation are available.
4. **Consider the acceptability issues** associated with the evaluation – particularly
 - Who would “own”/manage the evaluation (e.g. AHMAC; AHIC; HealthConnect governing body, Program Office);
 - How would the results be made relevant/acceptable to key stakeholders; and
 - Are there any sensitivities that need to be recognised in advance that may affect the evaluation design and/or implementation?
5. If there are clear purposes for the evaluation; if suitable methods can be identified which are feasible and have a good chance of being acceptable to key stakeholders; then proceed with implementation, viz:
 - Develop/commission a detailed economic protocol;
 - Establish the evaluation team and oversight arrangements; and
 - Negotiate the funding arrangements.

6.3.4 Feasibility and Acceptability

An important challenge for any economic evaluation conducted on HealthConnect is to make the task practical and relevant. In addition to choosing sensible methods in the protocol, the evaluation will need to be staged as a series of manageable tasks that still come together as a coherent analysis. Choice of pilot projects to host the economic evaluation(s) will be critical.

The current South Australian and Tasmania Whole of State implementations are obvious options. Evaluation expertise will be required at both the national and project specific levels.

7 Recommended Next Steps

There are several key suggested steps needed to progress the realisation and monitoring of benefits from HealthConnect. These steps include:

1. Develop a business case for the full national implementation of HealthConnect

Developing a business case that identifies all costs and benefits will require developing and conducting an economic evaluation of an initial implementation of HealthConnect. This economic evaluation will need to highlight the economic benefits of HealthConnect, which can then be used in the business case.

The development of a business case for HealthConnect should also include the development of a full and accurate cost model for HealthConnect, against which the benefits can be compared. The analysis in the business case will need to weigh the benefits of implementing HealthConnect against the costs and risks of implementation.

2. Develop an Evaluation Strategy, an Evaluation Framework and an Evaluation Plan for HealthConnect

In order to effectively evaluate the implementation of HealthConnect, there is a need to develop a robust Evaluation Strategy, Framework and Plan for the implementation of HealthConnect. This work needs to take into account the ongoing Phase 2 Trials, as well as the Whole of State implementations as they occur. The strategy will need to take both national and local evaluation requirements into account.

The evaluation of HealthConnect will need to perform several different functions: it will need to identify implementation lessons that can be used to make subsequent implementations more effective; it will need to use existing HealthConnect trials, the MediConnect Field Test and HealthConnect implementation sites to fill any knowledge gaps that exist; it will need to evaluate the HealthConnect system and the business requirements, and identify any improvements that can be made; and it will need to monitor the realisation of benefits resulting from the implementation.

As part of developing an evaluation strategy for the implementation of HealthConnect, there is a need to develop a framework of performance indicators that can be used to measure how HealthConnect is having an impact on those areas where it is expected to deliver benefits. This process will also include the collection of baseline data. It may also prove necessary to develop a benefits register to identify the benefits that HealthConnect is expected to deliver, and to record progress in achieving them. In developing the performance indicators, it will be important to draw on the work of the economic evaluation identified above.

3. Develop governance systems to guide and monitor the realisation of benefits

As well as measuring the benefits that HealthConnect is delivering, it will also be important to monitor the progress that is being made in delivering them. This will mean the development of appropriate governance structures to monitor the progress in delivering benefits. Governance structures for benefits realisation will be needed at both the local and national level, and it will be important for these structures to interact to ensure that knowledge is shared across the entire project. These structures will also need to assign the responsibility for realising the benefits of HealthConnect in each jurisdiction.

In this light, it may also be necessary to form a benefits realisation implementation team within HealthConnect to:

- customise benefits realisation for the wider national HealthConnect focus and for the initial State and Territory implementations;
- develop a benefits realisation and evaluation capability in each of the initial State and Territory implementations;
- define the process owners for benefits realisation activities;
- create teams with responsibility for implementation support activities in the States and Territories, such as change management communications and training; and
- support the change management effort by communicating the concepts and advantages of benefits realisation across the wider HealthConnect constituency.

Appendix A Electronic Health Record Prototypes

A number of HealthConnect prototypes have been developed to provide a common structure for the proposed electronic health record (EHR). The following electronic health record prototypes are envisaged for HealthConnect.

Health Event Summary – Health information about one or more health care events, relevant to the ongoing care of a consumer. The collection of health event summaries relating to a consumer will constitute their HealthConnect record. Health event summaries for HealthConnect will include:

- An initial health profile;
- GP consultations;
- Hospital discharge summaries;
- Medications; and
- Pathology and Imaging results.

EHR list⁴⁰ – a collection of similar EHR items describing a key aspect of a consumer's health formed to serve a specific purpose. There are two types of EHR lists – maintained lists and derived lists. A maintained EHR list is one that requires clinical judgement to determine if a new item of information should be added to the list, or if and when an item should be removed from the list. Based on this definition, the following are maintained EHR lists:⁴¹

- Current medications;
- Active problems/diagnoses;
- Adverse reactions;
- Warnings;
- Recent and/or significant tests and investigations;
- Immunisations; and
- Inactive significant problems/diagnoses.

⁴⁰ Information on Health Event Summaries and Electronic Health Record lists in this Appendix is adapted from the Department of Human Services (SA) and Department of Health and Ageing, *HealthConnect Clinical Information Project Phase 1 Report Part B Stream 2*, Canberra, 2004, pp17-21. Available at http://www.health.gov.au/healthconnect/pdf_docs/cip_pdfs/cipp1pb.pdf.

⁴¹ Another potential type of event summary is a Home Medication Review conducted by a pharmacist. This is an opportunity to review critical patient information, and to include over-the-counter and complementary medicines in a consumer's HealthConnect record. Personal communication, Ms Debbie Rigby, Clinical Pharmacist Consultant, 28 July 2004.

Alternatively, a derived EHR list is one that can be automatically generated as a view or query across all relevant health event summaries, such as:

- Prescribing history;
- Procedure/treatment history;
- Lifestyle;
- Family history; and
- Recent significant health services.

EHR view – EHR views have been defined in two ways to avoid confusion around the ‘system’ and ‘user’ uses of the term:

- **EHR View (system)** – is defined as a set of data items selected from the EHR, processed and returned in response to a query for user consumption; and
- **EHR View (user)** – is the ‘visual presentation’ of the data items selected and returned in response to a user’s request.

Appendix B Processes, Impacts and Outcomes

There are a number HealthConnect processes that will be undertaken by a number of key stakeholders in conducting day-to-day clinical processes. The following table presents examples of the processes and impacts of HealthConnect in various health care contexts.

HealthConnect Processes	Impacts	Outcomes
Ability for GPs to access accurate patient information (including identity, alerts, current medicines, allergies, results of diagnostic tests, hospital discharge summaries etc).	<p>Increased efficiency of information exchange between various care providers.</p> <p>Decreased incidence of unnecessary services.</p> <p>Better medication management.</p> <p>Fewer prescriptions written and dispensed.</p> <p>Enhanced management of complex and chronic disease.</p>	<p>Improved health status.</p> <p>Increased patient satisfaction.</p> <p>Efficiency gains for providers.</p> <p>Decreased costs to Medicare Benefits Schedule (MBS), Pharmaceutical Benefit Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS).</p> <p>More efficient use of GP time.</p> <p>Improved patient safety.</p>

HealthConnect Processes	Impacts	Outcomes
Ability for patients/carers to access accurate patient information.	<p>Increased participation in patient's own treatment and ongoing care.</p> <p>Reduced need for consumers to repeat their medical history to different care providers.</p> <p>Fewer adverse events (including adverse drug events [ADEs]).</p>	<p>Improved health status.</p> <p>Improved patient safety.</p> <p>Increased consumer empowerment and patient satisfaction.</p>
Ability for hospital clinicians to access accurate patient information (including identity, alerts, current medicines, allergies, results of diagnostic tests etc).	<p>More informed clinical decision-making.</p> <p>Fewer adverse events, including ADEs.</p> <p>Fewer hospital prescriptions written and dispensed.</p> <p>Better medication management.</p> <p>Decreased time searching for patient records.</p> <p>Decreased length of stay.</p> <p>Decreased incidence of unnecessary services.</p> <p>Improved knowledge about the existence of patient co-morbidities.</p> <p>Reduced need for consequential care from a reduction in adverse events.</p>	<p>Improved health outcomes.</p> <p>Improved patient safety.</p> <p>Decreased morbidity and mortality due to fewer avoidable events including ADEs</p> <p>Decreased time off work for consumers.</p> <p>Decreased costs to MBS, PBS and RPBS.</p> <p>Decreased expenditure on diagnostic services.</p> <p>Increase in diagnostic service capacity.</p> <p>More efficient use of health care resources.</p> <p>Increased patient satisfaction.</p>

HealthConnect Processes	Impacts	Outcomes
Ability for hospital emergency clinicians to access accurate patient information (including identity, alerts, current medicines, allergies, results of diagnostic tests etc).	<p>Reduction in clinician effort associated with taking histories and preparing summaries.</p> <p>More informed decision-making by clinical staff in hospital emergency departments.</p> <p>Fewer adverse events, including ADEs.</p> <p>Better medication management.</p> <p>Fewer hospital prescriptions written and dispensed.</p> <p>Decreased incidence of unnecessary services.</p> <p>Improved knowledge about the existence of patient co-morbidities.</p> <p>Reduced need for consequential care from a reduction in adverse events.</p>	<p>Improved health status.</p> <p>Improved patient safety.</p> <p>Decreased morbidity and mortality due to fewer avoidable events including ADEs.</p> <p>Increased clinician emergency service capacity.</p> <p>Decreased expenditure on diagnostic services.</p> <p>Increase in diagnostic service capacity.</p> <p>Decreased costs to MBS/PBS.</p> <p>More efficient use of health care resources.</p> <p>Increased patient satisfaction.</p>

HealthConnect Processes	Impacts	Outcomes
Ability for hospital administrative staff to access accurate patient information at time of admission, discharge and ward management.	<p>Increased efficiency of peri-operative processes.</p> <p>Decreased need to cancel operations</p> <p>Improved knowledge about the existence of patient co-morbidities.</p> <p>Decreased patient waiting and travelling time.</p> <p>Reduced time spent chasing paper-based records or dispersed electronic records.</p> <p>Increased efficiency and effectiveness of transfer of patients between care settings.</p>	<p>More efficient use of health care resources.</p> <p>Increased efficiency of hospital administration.</p> <p>Increased patient satisfaction.</p>
Ability for care providers to access accurate patient information (including discharge summaries) at time of assessment following hospital care.	<p>More coordinated and better integrated patient care following hospital stays.</p> <p>Reduced duplication of effort in updating records.</p> <p>Fewer prescriptions written and dispensed.</p> <p>Better medication management.</p>	<p>Improved health status.</p> <p>Improved patient safety.</p> <p>Increased patient satisfaction.</p> <p>More efficient use of health care resources.</p>

HealthConnect Processes	Impacts	Outcomes
Ability of specialists to access accurate patient information (including identity, alerts, current medicines, allergies, results of diagnostic tests etc).	Fewer adverse events, including ADEs. Decreased incidence of unnecessary services. Better medication management.	Improved health status. Improved patient safety. Increased patient satisfaction. Efficiency gains for providers. Decreased costs of MBS/PBS/RPBS.
Ability of allied health professionals to access accurate patient information (including identity, alerts, current medicines, allergies, results of diagnostic tests etc).	Fewer adverse events, including ADEs. Decreased incidence of unnecessary services.	Improved health status. Improved patient safety. Increased patient satisfaction. Efficiency gains for providers. Decreased costs of MBS/PBS/RPBS.
Ability for community pharmacists to access accurate patient information.	Fewer dispensing errors. Better medication management. Fewer adverse events, including ADEs. Enhanced management of complex and chronic disease.	Improved patient safety. Improved health status. Decreased cost of PBS and RPBS.

HealthConnect Processes	Impacts	Outcomes
Ability of clinicians to access accurate patient information (including identity, alerts, current medicines, allergies, results of diagnostic tests etc) at time of transfer from hospital into nursing homes or community based care.	<p>Increased efficiency of transfer of patients from hospital to nursing homes or into community based care.</p> <p>Fewer adverse events, including ADEs.</p>	<p>Improved patient safety.</p> <p>Improved health status.</p>
Ability of ambulance officers to access accurate patient information (including identity, alerts, current medicines, allergies, results of diagnostic tests etc) at time of transfer to and from hospital.	<p>Increased efficiency and effectiveness of transfer of patients.</p> <p>Fewer adverse events, including ADEs.</p>	<p>Improved patient safety.</p> <p>Improved quality of care.</p> <p>Increased patient satisfaction.</p> <p>More efficient use of health care resources.</p>
Ability to access clinical transactions electronically in a timely manner (including prescriptions, orders for pathology, radiology and referrals).	<p>Improved accuracy of information.</p> <p>Increased efficiency of information sharing among care providers.</p> <p>Increased efficiency of dispensing prescriptions.</p> <p>Increased efficiency of referrals from GPs to specialists.</p> <p>Improved care management.</p> <p>Decreased patient waiting time.</p>	<p>Increased patient safety.</p> <p>Improved health status.</p> <p>Increased patient satisfaction.</p> <p>Efficiency gains for providers (eg pharmacy, radiology, pathology, specialists).</p>

HealthConnect Processes	Impacts	Outcomes
Ability for researchers, planners and policy developers to access accurate, de-identified secondary data.	<p>Improved data for research on health outcomes and efficacy of treatment.</p> <p>Improved data for policy development and planning.</p>	<p>More informed policy development.</p> <p>Better health sector planning.</p> <p>Increased quality of care.</p>
Ability for outpatient clinicians and staff to access accurate patient information (including identity, alerts, current medicines, allergies, results of diagnostic tests etc).	<p>Improved coordination of patient care.</p> <p>Better medication management.</p> <p>Fewer adverse events, including ADEs.</p> <p>Increased efficiency of outpatient services.</p>	<p>Increased health status.</p> <p>Increased patient safety.</p> <p>Increased patient satisfaction.</p> <p>Efficiency gains for outpatient providers.</p> <p>More efficient use of health care resources.</p>

Appendix C Contribution of HealthConnect to the National Health Reform Agenda

This appendix describes the contribution that HealthConnect can make in support of National Health Reform, as articulated by Australian Health Ministers.

National Health Reform Agenda	Selected HealthConnect Contribution
Hospital Interface Issues: Emergency Departments and General Practice	Enhanced patient information available for better decision-making, especially in emergencies. Through the implementation of HealthConnect, there is potential to avoid unnecessary testing and hospital admissions from adverse drug events. Providers of health care services will be able to record and (with the prior consent of the consumer) make available co-morbidities, current medicines and information on allergies, adverse drug reactions and alerts to hospital emergency departments.
Improved Transition Between Acute and Aged Care Services	Improved communication of current patient information. Potential to avoid unnecessary testing and to reduce adverse events.
Improved Access to Elective Surgery	Increased efficiency of peri-operative procedures. Reduced waiting lists and times.
Continuum of Care: Management of Chronic Disease	Improved management of chronic disease, such as cardiovascular disease and diabetes.
Cancer care	HealthConnect provides the necessary infrastructure for sharing information among cancer care clinicians and for the improved management of care.
Mental health	HealthConnect facilitates information sharing about patients with Alzheimer's disease and other forms of dementia.
Pharmaceuticals	Implementation of HealthConnect enables better medication management through access to current patient medicines and allergies.
Information Management and Information Technology	HealthConnect is an example of the use of Information Management and Information Technology in the health care environment.
Safety and Quality	Reduced adverse events, including adverse drug events. Improved quality of care through better access to patient information.
Workforce	HealthConnect facilitates resource planning and better decision-making through better access to secondary data sources.

Appendix D State/Territory Health Reform Priorities

The implementation of HealthConnect would contribute to achieving the respective State/Territory health reform objectives. Specific State/Territory Health Reform priorities are listed in the table below.

Specific State/Territory Health Reform Priorities
<p>ACT Government⁴²</p> <p>The ACT Government has identified the need to:</p> <ul style="list-style-type: none"> • Improve health care through information management and technology; • Develop a clinical information system for the ACT to be more easily accessed wherever a client presents. Central to achieving this objective is deployment of a unique patient identifier; • Work with and participate in national strategies such as HealthConnect to improve and comply with national and international standards and information compatibility for improved local and national decision-making. This will include compliance with privacy and security standards; • Improve the transition process from hospital to home and enhance client information systems and follow up care; • Work towards the development of a secure, confidential ACT electronic health record for individual clients and patients to support continuity of care; • Develop processes where clients are able to give consent to sharing information for a specific service need; and • Improve data collections on the health status of mainstream and community health services by Aboriginal and Torres Strait Islander people.

⁴² ACT Health, *Health Action Plan*, 2002. For further details see <http://www.health.act.gov.au>

Specific State/Territory Health Reform Priorities

NSW Government⁴³

The NSW Government Action Plan for Health focuses on:

- Improving the organisation and delivery of Health Services in the areas of acute care, chronic care, emergency departments and intensive care;
- Consumer and community involvement in the health system;
- Metropolitan Health Services including the establishment of a coordinated network of clinical services across Sydney;
- Rural Health Services, including access for communities to appropriate, quality health care and the development of new service delivery models; and
- Information management, including the development of an Electronic Health Record and Unique Patient Identifier, underpinned by appropriate privacy and security standards.

NT Government⁴⁴

NT Government is dedicated to using knowledge and technology to build health and community services through:

- Support for health professionals through high quality access to all relevant health databases in the NT system;
- Health professionals consulting on-line with relevant specialists researchers, doctors and administrators in the NT and elsewhere; and
- The public receiving health information across a range of broadcast and interactive media.

⁴³ NSW Health Department, *Strategic Directions for Health 2000-2005*. For further details see http://www.health.nsw.gov.au/health-public-affairs/sdir/strategic13_10.pdf

⁴⁴ Northern Territory Government Department of Health and Community Services, *Building Healthier Communities, A Framework for Health and Community Services 2004-2009*, Darwin, 2004, pp 34-35.

Specific State/Territory Health Reform Priorities
<p>Queensland Government⁴⁵</p> <p>Focussing the purpose and role of Queensland Health on:</p> <ul style="list-style-type: none"> • Prevention, health promotion and early intervention; • Evidence-based clinical practice; • Partnership with all health providers (including private sector and non government bodies); • Managing the public health risks to Queenslanders; • Maintaining a high quality of health care; • Priority in allocation of resources to meet demonstrated need and principles of equity; • Encouraging individual responsibility for personal health; • Fostering research and education to continuously improve health services; and • Respect for the health rights and needs of individual consumers.
<p>SA Government⁴⁶</p> <ul style="list-style-type: none"> • Offer a ‘seamless’ service focused on continuity of care, including service cooperation and coordination across the system. • Deliver high quality care through networked clinical services in local, regional and central settings

⁴⁵ Queensland Health Strategic Principles, *Queensland Health Strategic Plan 2003-2007*. For further information see <http://www.health.qld.gov.au/publications/corporate/stratplan03/default.asp>

⁴⁶ Menadue, J., *Better Choices Better Health*, Final Report of the South Australian Generational Health Review, Adelaide, 2003. For further information see www.sahealthreform.sa.gov.au

Specific State/Territory Health Reform Priorities**Tasmanian Government⁴⁷**

- Strengthening prevention and management of chronic conditions;
- Better management of complex, exceptional cases;
- Improving the sustainability of acute care;
- Improving quality and safety;
- Evidence based decision-making (clinical and organisational);
- Client centred information to allow seamless services; and
- Clients and clinicians are enabled to interact with Tasmanian health care services.

⁴⁷ Tasmanian Department of Health and Human Services, *Business Case for the Implementation of HealthConnect in Tasmania*, unpublished, Hobart, 2004.

Specific State/Territory Health Reform Priorities

Victorian Government⁴⁸

The Government of Victoria has as a priority the creation of high quality, accessible efficient health care services through its public hospital system, community health and ambulance services.

Key opportunities for ICT identified by the Victorian Government include:

- Increase the quality and safety and improve health outcomes by making clinical information available to clinicians at the points of care to remove errors introduced through transcription of data to increase clinicians' ability to make timely, informed decisions;
- Developing more consumer-oriented health care through increased access to electronic patient records and active communication of event details and patient information between providers; and
- Attracting, retaining and supporting a highly skilled workforce by:
 - Removing unnecessary administrative activities by automating these where appropriate;
 - Removing wasted effort required administering patient data, particularly transcription of results and location of x-ray films;
 - Taking patient data to the clinician at points of care rather than the clinician having to 'go to' the physical paper records;
 - Supporting evidence-based care through systems actively supporting clinical protocols and pathways; and
 - Removing the inefficiency and inaccuracy of relying on paper records.

Information needs to be managed and used as a critical asset of the health system with the right information presented to the right person at the right location in the right form at the right time.

⁴⁸ Victoria 2010: Policy Context, 2003-2006. Health *SMART*. (2003) *Strategy for the modernisation and replacement of information technology*. Victorian Government Department of Human Services. For further information see <http://www.healthvic.gov.au/healthit>

Specific State/Territory Health Reform Priorities

WA Government⁴⁹

- Provide safe, high quality evidence based health care.
- Promote a patient centred continuum of care.
- Implementation of a coordinated long-term health promotion program that has an integrated lifestyle approach to the prevention of cardiovascular disease, cancer and diabetes. This program should include a particular focus on Aboriginal communities.
- The implementation of the WA Health Call Centre to be used to support the interface between GPs, community based services and hospital care and enable better monitoring and support for patients with chronic and complex conditions.
- As electronic patient record systems are developed across the public health system there should be collaboration with GPs to develop standardised electronic discharge summaries.
- Early discharge programs that organise and coordinate self-management, home care and community support programs should be extended to involve the non-government and GP sectors.
- The WA Department of Health should progressively implement a system wide clinical information system that incorporates the public and private hospital, community health, primary care and mental health sectors. The system would include electronic patient records, unique medical record numbers and provider identification.
- Opportunities for telehealth to be a component of the integrated care system should continue to be explored. Further development will involve clinical leadership and the availability of appropriate bandwidth and infrastructure. The WA public health data and information should be consolidated into a single repository.

⁴⁹ *A Healthier Future for Western Australians*, Report of the Health Reform Committee, (2004) For further information see http://www.health.wa.gov.au/hrc/finalreport/docs/Final_Report.pdf

Appendix E Impact of HealthConnect Business Requirements on the Benefits Realisation Framework, Implementation Approach and Implementation Plan

The draft business requirements have been assessed and analysed in respect of their impact upon this Benefits Realisation Framework and the Implementation Approach and Implementation Plan. The results of this assessment have been included in the following table.

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
Registration and taking patient histories within an agreed privacy regime.	Any changed processes within GP, specialist and hospital settings associated with patient registration or taking of patient histories that lead to a delay in patient throughput will result in low clinician take up and ongoing participation.	<p>Strong consumer and provider confidence in the proposed privacy arrangements will optimise take up and benefits realisation.</p> <p>Lack of responsiveness of system when checking privacy and consent will adversely affect provider take up.</p>	<p>Urgent finalisation of draft policy and legislative environment by each jurisdiction.</p> <p>Mutual recognition arrangements may be an interim solution.</p> <p>Interim solutions developed in Tasmania and South Australia will migrate into Version 1.</p> <p>Pragmatically and as a minimum Version 1 systems design to comply with Vic and NSW privacy environment.</p> <p>Leveraging existing NSW Health-e-link initiatives in Hunter and Western Sydney, as these would already comply with NSW privacy legislation. As there is a minimal GP</p>	<p>Proven privacy legislation exists in states with high population densities (NSW and Vic).</p> <p>Version 2 would need to take into account any mutual recognition by providers of other privacy arrangements existing in other jurisdictions.</p> <p>Change management program, in particular enrolment procedures, to address privacy and consent issues as a high priority 2004/05.</p>

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
			<p>involvement in this initiative, its scalability would need to be critically examined.</p> <p>Component based design, which allows modularisation of replaceable privacy elements is essential. As a consequence, interface designs and tele-messaging efficiency needs to be robust and scalable between and within jurisdictions.</p> <p>As part of any provider education/communications/change program it is recognised that, at least in the medium term, signing of paper based forms will be required.</p> <p>Early and ongoing discussions with Divisions of General Practice and other provider groups on privacy and consent and business change will be mandatory.</p>	
<p>Consent: -</p> <p>Opt in basis.</p> <p>Informed consent.</p>	<p>Proof of informed consent registration must be written and obtained prior to accessing a participant's health record.</p>	<p>Opt in by consumers may impact rate of take up and benefits realisation.</p> <p>Highly efficient and appropriate</p>	<p>Extensive change management and communications requirements for consumers and provider representatives.</p>	<p>Reflect opt in requirements in the systems design and development phase.</p> <p>Focus communications plan</p>

⁵⁰ Annexure I, Health Insurance Commission, Request For Tender 04/04, Replacement of Medicare cards with Medicare Smart cards and Related Infrastructure, July 2004.

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
<p>Withdrawal from HealthConnect at any time.</p> <p>System architecture to allow consumers to opt out from uploading some individual episodes of care into the EHR</p> <p>Consent can be withdrawn for individual episodes of care.</p> <p>Carer guardian consent on behalf of a child.</p> <p>Secondary uses of HealthConnect data.</p>	<p>As EHR will not be a complete record, OTC and homeopathy medicines are not included unless the patient themselves include.</p> <p>Any additional administrative requirement imposed on providers to upload patient histories will result in fewer patients seen by GPs and specialists.</p> <p>Providers' system interfaces may need to include Interactive Voice Response capability to efficiently capture information during or shortly after consultation.</p> <p>Retaining original event summaries in the system and tagging each with a consent flag may have implications for work practices and take up. UK model of encrypted envelope is not supportable by provider and hospital clinical information</p>	<p>processes for registration and recording patient histories may optimise take up.</p>	<p>As clinicians are unlikely to want to spend time explaining forms to consumers, agents such as the HIC Medicare offices might be used.</p> <p>Training in implementing the agreed consent protocols will be addressed in the implementation approach.</p> <p>There are implications for some Medicare offices in scaling from existing trials and implementations in Tasmania, South Australia and New South Wales.</p> <p>The following data items are to be included on the Medicare smart card chip:⁵⁰</p> <ul style="list-style-type: none"> ○ Medicare card number ○ Issue Number ○ Medicare card expiry date ○ 1st name of consumer ○ 2nd name of consumer ○ Surname of consumer ○ Unique Patient Identifier 	<p>and release strategy to optimise early take up by providers and consumers.</p>

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
	systems at this stage.		<p>(HIC Consumer ID)</p> <ul style="list-style-type: none"> ○ Medicare sub-numerate ○ Image max 4096 bytes ○ Allergies of an individual ○ If the consumer has registered for the Medicare family safety net. <p>HealthConnect Practice Incentives may be required to optimise take up by providers.</p> <p>Could focus initial implementation on IT literate providers and hospital clinicians.</p>	
Registration - People who are eligible for Medicare will be eligible to be registered with HealthConnect.	Use of Medicare offices to establish proof of identity (POI) prior to registering obviates the need to establish separate procedures.	Less burden on providers will encourage their take up of and participation in HealthConnect.	<p>Leverage existing Medicare infrastructure to establish POI.</p> <p>Appropriation of sufficient funds to HIC to cover a potential short fall in resources in Medicare offices.</p>	
Registration: - Health providers will be recognised as part of their professional registration processes.	Provider registration may be a sub-set of facility registration, evidence of identification required.	Registration processes will affect provider take up with consequential impact upon benefits realisation.	<p>Privacy and consent models to be proven prior to implementation of the registration modules.</p> <p>Consider leveraging PIP/HIC</p>	

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
	<p>Highly efficient processes required.</p> <p>Any degradation in system performance is likely to impact upon the technical efficiency and utility of the HealthConnect network.</p>		infrastructure eg tele-communications provider directories	
Registration: - Public and private hospitals, outpatient clinics, general practices, community health centres, pharmacies, aged care facilities and other non-government health organisations.	<p>Highly efficient processes required to register organisations and the providers within them. Third party providers are subject to employer protocols under their terms and conditions of employment.</p>	If clinicians within other provider organisations don't use HealthConnect the EHR will not be fully completed and the wider potential of the implementation not realised.	<p>Work practice efficiency models to be developed.</p> <p>MOUs between the Commonwealth and State/Territory governments to reflect need for effective third party participation by clinicians in hospitals and other institutions.</p>	Early enrolment of third party providers under MOUs between the Commonwealth and State/Territory governments.
Registration: - Active until formal notification is received of the intention to deregister or of the death of the participant.	Implications for systems architecture and data archiving.	Providing access to longitudinal data will enhance the secondary use of HealthConnect data for health prevention.		
Registration: - Via a variety of modalities.	<p>Initially through Medicare Offices. Need flexibility to free clinicians from the burden of registration.</p> <p>Need a process for consumers/providers to</p>	The necessary levels of take up and hence benefits are unlikely to be achieved in the absence of efficient registration processes.	<p>Trial and determine the relative efficiency and effectiveness of several registration modalities.</p> <p>Develop and implement a multi-lingual communications strategy to address the complexities of</p>	<p>Optimise registration in rural and metropolitan areas with significant levels of population.</p> <p>Focus on modalities designed to maximise the registration of</p>

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
	identify themselves as HealthConnect users.		individual registration modalities. Match registrations of consumers and providers in targeted regions.	the very young and older age groups.
Consumer Identification: - Evidence of identity similar to Medicare.	Critical element of HealthConnect.	A unique consumer identifier is critical to realising the benefits derived from implementing the full functionality of the HealthConnect design.	Similar to above for registration.	Similar to above for registration.
Provider and Organisation Identification	A critical element of HealthConnect.	Unique provider and organisation identifiers are critical to realising the benefits derived from implementing the full functionality of the HealthConnect design.	Integrated with registration processes.	Similar to above for registration.
Security and Access Control: - Shared Electronic Health Record (SEHR) for consumers and a national network of secure repositories known as the HealthConnect Records Systems (HRS) operated by third parties.	Small number of HRS each of which may be operated by public or possibly private organisations. Consumers registered to one HRS (for their life or when notified of a permanent change?). With an increasingly mobile population (eg growth in the Sunshine Coast and Gold Coast	Responsiveness of national coordination layer will be paramount to HealthConnect's usability. System technical efficiency will impact upon take-up and therefore benefits realisation by providers.	Trialling the brokerage function to be implemented by the national coordination layer will be an important consideration for any network telecommunications capacity-planning done as part of the implementation approach. For example, lessons from Tas and SA implementations to be considered as part of national implementation. Confirm the business/operating/management model as part of the implementation	To be undertaken in 2005/06?

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
	statistical divisions of 3.53% and 3.49% respectively in 2001-02) consumers may live in one location and feasibly have their records stored elsewhere.		<p>approach.</p> <p>Assess the contestability of individual components of HealthConnect systems, technical architectures and tele-messaging by public and private sector providers.</p> <p>Development of an outcome focused statement of requirement and the strategy for acquiring the necessary HealthConnect functionality and capacity, e.g. Invitation to Register Interest, Expression of Interest, Request for Proposal).</p>	
Security and Access Control: - A series of event summaries will be accessible to the consumer and other nominated people.	If individual consumers are given update access to the EHR with, for example, the inclusion of over the counter and natural medicines, some GP providers may be reluctant users of HealthConnect.	<p>Some GPs have argued that if patients have uncontrolled update access to their record they may not be prepared to accept liability for the accuracy or otherwise of the record.</p> <p>Exclusion of the ability for consumers to include OTC medicines in the EHR will affect the ability to reduce ADEs.</p>	It will be important to identify via audit trail the persons who have had read/write access to the consumer's record.	Release version 1 to include the clinical environments of providers working in health care facilities.
Security and Access Control: - National coordination layer	Information will be brokered with individual HRS by the national	Benefits flowing to the entire Australian health system are predicated upon the technical	HealthConnect governing body (when created) to endorse and promulgate HealthConnect Security	Service level agreements will need to be developed in support of the statements of

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
governed and managed by a <i>HealthConnect</i> governing body.	<i>HealthConnect</i> coordination layer.	efficiency of the HRS and overarching coordination and telecommunications layers.	and Access Control Business Requirements. Confirm requirement for bilateral agreements and MOUs between the Commonwealth and the States and Territories. MOUs to be supported by long term service level agreements specifying target system performance levels and inclusion of audit trails.	requirements issued as part of an acquisition process.
Security and Access Control: - Each HRS must conform to agreed security policy and standards. The HRS must protect the confidentiality, integrity, availability and non-repudiability of the information.	Security of information will enhance consumer and provider confidence and hence take up in <i>HealthConnect</i> .	The implementation of robust information security arrangements enhances consumer and provider confidence and optimises benefits realisation.	Reflect robust security considerations in the communication strategies to be developed in support of the registration processes.	July – December 2005
Security and Access Control: - Providers may access the SEHR directly from the HRS via personal IT devices or via an endorsed healthcare IT system.	Assumes that providers' software has the required installed functionality to interact with <i>HealthConnect</i> . Approx. 50+ different GP and at least 10 major hospital IT systems exist.	System interoperability will impact upon process efficiencies and the realisation of benefits from <i>HealthConnect</i> .	Vendor engagement is a key element of stakeholder management and the implementation approach. <i>HealthConnect</i> governing body to develop procedures and protocols for endorsing healthcare IT systems. <i>HealthConnect</i> governing body will encourage system owners to give	2005 and ongoing

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
			preference to using the Australian Government's Australian Information Security Evaluation Program (AISEP).	
Security and Access Control: - All users shall be uniquely identified and authenticated each time they request access to HealthConnect.	Technical architecture and systems design will need to ensure system process efficiencies are realisable and processing volumes do not result in degradation of the HRS.	In the absence of significant process efficiencies being derived from the implementation of HealthConnect, early take up targets for providers in hospitals and other healthcare facilities may not be achievable.		Capacity planning to be undertaken in 2004/05
Health Information Processing and Storage: - All messages received by an HRS in respect of a participating consumer must be validated and stored.	Affects consumer confidence in the HRS.	Impacts consumer take up.	Conduct discussions with States/Territories on information storage. At least one jurisdiction has a stated policy that health information will be stored in that jurisdiction.	2004/05
Health Information Processing and Storage: - Backward compatibility, interoperability and integrity of the stored data through time.	Increase in provider confidence in the HRS as a tool to enhance efficiency and effectiveness.	Impacts upon process efficiency, system utility, provider take up and benefits realisation.		
Health Information Processing and Storage: - Data stored within the	Enables secondary use of the data.	Impacts upon ability to conduct whole of system research and planning.	Secondary use of data to be a key component of the approach.	

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
HRS will have a lifetime extending beyond the consumer's lifetime.				
Health Information Processing and Storage: - HRS to be continuously available.	Legal liability issues to be fully identified (including confusion of patient identity and loss of patient life from an adverse drug event) to be considered and resolved.	<p>Availability of the HRS to enhance decision making by healthcare professionals is fundamental to process efficiencies being realised in hospital emergency departments and other health care facilities.</p> <p>If system performance is sub-optimal the potential longer-term health gains for consumers may not be realised.</p>	To be reflected in service level agreements.	<p>Legal issue to be resolved in 2004.</p> <p>Service level agreements to be developed in 2005.</p>
User Interfaces, Messaging and Transport: - Ability to access clinical transactions electronically in a timely manner (prescriptions, orders for pathology, radiology and referrals).	No introduction of unnecessary business processes as these would impact upon provider efficiency.	No degradation in provider efficiencies otherwise utility of the system will not be proven, take up will not be achieved and benefits will not be realised.	<p>Finalise the data architecture, largely through the work of the Clinical Information Project.</p> <p>Develop implementation architecture specification.</p> <p>Identify any potential changes to work practices for workforce.</p> <p>Business process change for providers needs to be a key element of the change management strategy.</p>	<p>Definition of data standards. Early resolution of outstanding work practices issues in the OACIS implementation in SA in 2004/05.</p> <p>2004/05</p>

Business Requirements	Preliminary Assessment	Impact on Benefits Realisation Framework	Impact on Implementation Approach	Impact on Implementation Plan
			Stakeholder engagement, particularly the Divisions of General Practice, the Australian Medical Association and Australian Nursing Federation will be a key component of the implementation approach.	

Appendix F Statistical Tables

Population Estimates⁵¹

State/ Territory Population	Age (years)									Total
	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75+	
NSW										
Male	221,446	464,741	458,589	485,265	503,725	446,304	330,533	225,530	160,865	3,296,998
Female	209,887	441,794	440,792	490,886	503,296	445,198	323,338	564,186	217,738	3,637,115
Vic										
Male	157,005	335,144	340,790	362,007	366,225	323,264	237,113	162,724	116,817	2,401,089
Female	149,521	319,421	331,780	369,891	374,460	331,611	237,155	176,401	181,209	2,471,449
Qld										
Male	127,148	273,165	265,609	263,973	273,844	252,313	188,387	117,301	81,338	1,843,078
Female	120,348	258,953	258,379	272,036	283,173	253,424	180,240	119,904	117,640	1,864,097
SA										
Male	46,242	102,225	103,293	104,663	114,111	105,160	78,167	55,176	42,716	751,753
Female	44,397	96,758	98,460	101,528	114,354	107,484	79,101	59,892	66,525	768,499

⁵¹ The data contained in this table is from Australian Bureau of Statistics, *Australian Demographic Statistics, March 2003*, Cat. No. 3101.0, Canberra, 2003.

State/ Territory Population	Age (years)									Total
	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75+	
WA										
Male	64,054	140,720	142,600	141,291	148,563	136,140	94,315	58,048	38,582	964,313
Female	61,237	133,417	136,105	139,539	149,300	135,074	89,424	60,769	58,144	963,009
Tasmania										
Male	15,777	34,398	31,841	28,942	34,040	33,086	25,475	17,191	12,038	232,788
Female	14,894	32,729	30,866	30,332	35,576	33,511	25,120	18,248	18,661	239,937
NT										
Male	9,073	17,307	16,020	18,529	17,042	13,632	7,983	2,918	1,189	103,693
Female	8,574	15,969	14,705	17,719	15,588	12,191	5,927	2,282	1,365	94,320
ACT										
Male	10,413	22,605	26,428	25,565	24,147	22,404	14,669	7,581	4,911	158,723
Female	10,198	21,681	25,744	25,867	25,397	23,883	14,580	8,116	7,630	163,096
Total										
Male	651,158	1,390,305	1,385,170	1,430,235	1,481,697	1,332,303	976,642	646,469	458,456	9,752,435
Female	619,056	1,320,722	1,336,831	1,447,798	1,501,144	1,342,376	954,885	1,009,798	668,912	10,201,522

The table below presents Australian health expenditure for 2000-01 by disease group and expenditure type. The table has been developed from data presented in a recent Australian Institute of Health and Welfare publication.⁵²

Australian Health Expenditure by disease group and type (2000-01, Total = \$49.174b)										
INDICATIVE DISEASE GROUP	Hospitals		Aged Care Homes	Out of hospital medical services	Other profession al services	Pharmaceuticals		Dental	Research	TOTAL EXPENDIT- URE BY DISEASE
	Admitted patients	Non- admitted patients				Prescriptions	Over the counter			
Signs, symptoms, ill defined conditions and other contact with the health system	4.4%	1.0%	0.0%	3.6%	0.4%	1.2%	0.9%	0.0%	0.0%	11.4%
Cardiovascular	4.5%	0.6%	1.1%	1.5%	0.2%	2.3%	0.5%	0.0%	0.3%	11.0%
Musculoskeletal	2.6%	1.1%	1.0%	1.8%	1.5%	1.0%	0.4%	0.0%	0.1%	9.6%
Injuries	3.3%	2.4%	0.2%	1.3%	0.6%	0.2%	0.2%	0.0%	0.0%	8.3%
Respiratory	2.2%	0.7%	0.2%	1.7%	0.1%	1.2%	1.0%	0.0%	0.1%	7.2%
Oral health	0.3%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	6.3%	0.1%	6.9%
Mental disorders	2.1%	0.3%	0.7%	1.2%	0.3%	1.1%	0.1%	0.0%	0.2%	6.1%
Digestive system	2.8%	0.4%	0.1%	0.7%	0.4%	1.0%	0.3%	0.0%	0.1%	5.7%

⁵² Australian Institute of Health and Welfare, *Health System Expenditure on Disease and Injury in Australia, 2000-01*, Table 2, Canberra, May 2004, p13. The report provides an overview of total health system expenditures on disease and injury in Australia in 2000-01, based on the best possible estimates from currently available data sources. An allocation of the Australian health system expenditure in 2001-02 of \$66b has yet to be undertaken by the AIHW for disease groups and expenditure types.

Australian Health Expenditure by disease group and type (2000-01, Total = \$49.174b)										
INDICATIVE DISEASE GROUP	Hospitals		Aged Care Homes	Out of hospital medical services	Other profession al services	Pharmaceuticals		Dental	Research	TOTAL EXPENDIT- URE BY DISEASE
	Admitted patients	Non- admitted patients				Prescriptions	Over the counter			
Neoplasms	3.5%	0.6%	0.1%	0.6%	0.0%	0.4%	0.0%	0.0%	0.4%	5.6%
Nervous system diseases (other than Alzheimer's)	1.3%	0.6%	0.5%	1.0%	0.8%	0.7%	0.2%	0.0%	0.2%	5.3%
Alzheimer's disease	0.4%	0.0%	3.9%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	4.6%
Genitourinary	2.2%	0.5%	0.0%	0.9%	0.1%	0.4%	0.1%	0.0%	0.0%	4.2%
Endocrine, nutritional and metabolic	0.6%	0.2%	0.0%	0.7%	0.1%	1.3%	0.1%	0.0%	0.1%	3.2%
Skin diseases	0.6%	0.5%	0.0%	0.7%	0.2%	0.3%	0.4%	0.0%	0.0%	2.8%
Infectious and Parasitic	0.7%	0.3%	0.0%	0.7%	0.1%	0.4%	0.1%	0.0%	0.3%	2.5%
Maternal conditions	2.2%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%
Diabetes Mellitus	0.5%	0.1%	0.1%	0.4%	0.1%	0.5%	0.0%	0.0%	0.1%	1.7%
Neonatal causes	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%
Congenital anomalies	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.5%
Total	35.3%	9.5%	7.9%	17.2%	5.0%	12.0%	4.5%	6.3%	2.4%	100.0%

Baseline Data for Providers and Facilities

Individual Providers

Listed in the following table are estimates of individual providers by State and Territory potentially involved in the Australia-wide implementation of HealthConnect.⁵³

Potential Individual HealthConnected Providers	Providers by States and Territories								Australia
	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	
GPs	7,613	5,305	3,985	1,848	1,995	572	379	202	21,899
Key HealthConnect Specialty (excl. GPs)									
Cardiologists	233	151	92	58	46	10	10	2	608
Pathologists	396	274	169	116	107	23	23	6	1,114
Diagnostic Radiologists	548	417	262	140	166	34	28	2	1,597
Endocrinologists	92	82	41	23	15	5	5	1	264
Geriatric Specialists	77	72	27	12	34	4	5	0	231

⁵³ Data in this Appendix is taken from AMPCo, *Doctors Practising Nationwide by Discipline, by State and by Country/Metro*, AMPCo Medical Masterfile Statistical Analysis, March 2004. Document in possession of authors.

Potential Individual HealthConnected Providers	Providers by States and Territories								Australia
	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	
Obstetrics and Gynaecologists	356	291	213	101	86	26	18	11	1,102
Paediatricians	368	231	160	94	108	21	13	15	1,010
Psychiatrists	812	753	408	234	234	51	40	12	2,544
Anaesthetists	831	623	472	246	250	72	37	11	2,542
Emergency Medicine	244	214	158	60	82	28	9	12	807
Respiratory Medicine	113	71	51	33	23	6	4	0	301
General Physicians	336	284	190	105	112	48	15	16	1,106
Sub-total Key HealthConnect Related Specialty (excl. GPs)	4406	3463	2243	1222	1263	328	207	88	13,226
Community Pharmacists	2,151	1,518	1,234	494	624	183	80	37	6,321

Facilities

Listed in the following table are the maximum numbers of facilities by State and Territory potentially involved in the Australia-wide implementation of HealthConnect.

Potential HealthConnected Facilities	Facilities by State and Territory								Australia
	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	
Aged Care Facility	124	147	87	83	85	12	3	7	548
Community Health Centre	263	96	111	31	40	13	21	0	575
Community Health Service	97	82	104	40	38	7	3	1	372
Day Hospital	114	80	43	16	20	5	0	6	284
Government Health Service	22	19	36	6	10	4	2	0	99
Health Care Group	60	37	19	17	10	2	0	2	147
Hostel	314	242	86	43	95	10	1	6	797
Mental Health Facility	39	47	39	16	23	3	0	3	170
Nursing Home	341	296	129	90	85	33	6	6	986
Other Health Facility	41	17	13	6	5	1	0	1	84
Private Hospital	85	83	51	30	23	10	1	3	286

Potential HealthConnected Facilities	Facilities by State and Territory								Australia
	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	
Public Hospital	222	140	137	77	87	17	6	4	690
Retirement Village	188	102	128	53	14	8	1	8	502
Special Accommodation	32	26	14	4	11	1	0	0	88
Total	1942	1414	997	512	546	126	44	47	5628

Appendix G HealthConnect Strategic Results Chain

